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THE RATIONAL TREATMENT OF HODGKIN'S DISEASE *

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INTRODUCTORY

A combined pathologic, experimental and clinical study of Hodgkin's disease extending over a period of six years is the basis of this communication. The most efficacious methods of treatment will be presented with sufficient data to justify the various therapeutic procedures held to be indicated. Fischer[1] was unable in 1901 to find a record of a single case in which cure was *permanent*. None has since then been reported in the literature up to the present year. We have been so fortunate as to have seen two recoveries (that is, five years without evidence of the disease) and at present have a small number of patients under observation who are in a very encouraging condition three to six years after beginning treatment. We believe the disease more common than supposed, more protean in its clinical manifestations than is generally accepted, and not of necessity universally fatal.

This is to be regarded as a statement of observations made and an indication of the results attained by the practical application of the lessons drawn from those observations, laboratory and clinical. Although it is not claimed that a satisfactory routine method of treatment has been established, we feel that a single recovery is indeed encouraging and that prolongation of life, reduction of discomfort and the distinct possibility of 10 per cent. of ultimate cures justifies a conviction that our therapeutic principles are to some extent well founded.

DEFINITION

Hodgkin's disease may be tentatively defined as a non-contagious, infectious granulomatous process due to the *Bacillus hodgkini*. Primarily localized at or about a portal of entry, it causes a progressive enlargement of a specific nature in adjacent and remote pre-existing lymphoid structures, and early provokes characteristic changes in the blood picture. Once well established, the disease manifests little or no tendency to spontaneous recovery.

ETIOLOGY

A pleomorphic diphtheroid organism, gram-positive, antiformin-fast but not acid-fast, has been grown almost constantly,[2] and usually in pure culture from fresh tissue showing the characteristic pathologic changes in the disease. It has been stained in situ in affected tissue where it may occur in large numbers in an acute process and apparently be the only micro-organism present. Subcutaneous inoculation in pure culture into monkeys has provoked a series of changes quite analogous to the disease as manifested in its more acute form in the human. Recovered in pure culture from lesions in a monkey in which the disease had become established, the inoculation of another monkey therewith induced a similar affection as did likewise a subcutaneous transplant of an involved gland from an affected to a normal monkey.[3] Moreover, the monkeys soon after inoculation show changes in their blood pictures identical with those observed in spontaneous human cases. Similarly the subcutaneous injection into a quite normal individual of five, ten and twenty million bacilli of a polyvalent stock Hodgkin's vaccine at intervals of five days has produced within four days of the last injection the blood changes which Dr. Bunting[4] has shown to be an almost constant characteristic of the disease.[5]

Diphtheroid organisms are widely distributed[6] and are being cultivated from a variety of pathologic tis-

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* This paper has been abbreviated in THE JOURNAL by the omission of the case reports. The complete paper appears in the authors' reprints.

1. Fischer: Deutsch. Ztschr. f. Chir., 1901, xxiv, A, 104.

2. Negri and Mieremet: Centralbl. f. Bacteriol., 1913, lxvii, 292. Bunting, C. H., and Yates, J. L.: Cultural Results in Hodgkin's Disease, Arch. Int. Med., August, 1913, p. 236. Rosenow, E. C., and Billings, Frank: The Etiology and Treatment of Hodgkin's Disease, THE JOURNAL A. M. A., Dec. 13, 1913, p. 2122. Steele: Boston Med. and Surg. Jour., 1914, clxx, 123.

3. Bunting, C. H., and Yates, J. L.: An Etiologic Study of Hodgkin's Disease, THE JOURNAL A. M. A., Nov. 15, 1913, p. 1803; ibid., Feb. 14, 1914, p. 516.

4. Bunting, C. H.: Bull. Johns Hopkins Hosp., 1911, xxii, 369; ibid., 1914, xxv, 173.

5. Solely for the benefit of the antivivisectionists be it known that the above mentioned individual was a physician who understood the nature of the experiment.

6. It has been so long and so widely held that Hodgkin's disease was of an infectious origin that attempts have been made by many investigators to isolate organisms from tissue obtained at operations or post mortem. Cocci were found first (Verdelli: Centralbl. f. Med. Wissensch., 1893, xxxi, 545); later various cocci and bacilli (Brigidi and Peccoli: Ziegler's Beitr., 1894, xvi, 338) leading to a suspicion that a number of bacteria might be causative agents. Delbet isolated a bacillus (Delbet: Compt. rend. Acad. d. sc., 1895, cxx, 1373) which was not described, and was said to have caused characteristic glandular enlargements after intraperitoneal and subcutaneous injections into dogs. Emulsions of glands have been injected into various animals, and if there was not a concomitant tuberculosis the results were quite negative. Thus Longcope produced transient glandular enlargements in monkeys (Longcope: Bull. Univ. of Pennsylvania Med. Dept., 1907-8, xx, 229) which failed to show characteristic pathologic changes. A possible relationship to syphilis has repeatedly been suggested. Spirochetes were said to have been stained in sections of typical glands (White: THE JOURNAL A. M. A., Aug. 31, 1907, p. 774) but this has lacked confirmation through a positive Wassermann reaction (Caan: München. med. Wchnschr., 1910, lvii, 1002) has been obtained in cases giving a negative luetic history. As a heritage of the belief that Hodgkin's disease was an atypical tuberculosis, Fraenkel and Much have held that an organism which they obtained with great regularity from various affected tissues by an antiformin method was a granular, nonacid-fast tubercle bacillus. (Fraenkel and Much: Ztschr. f. Hyg. u. Infectionskrankh., 1910, lxvii, 159.) They were unable to obtain a culture of this organism or to reproduce the disease by inoculation of animals with the filtrate which contained it. It is probable that they were dealing with *B. hodgkini*.

sues. Until the identity of the *B. hodgkini* has been determined accurately it will be impossible to fulfil Koch's dicta to the letter, yet from the facts already established it would seem justifiable to assume that the causal relationship of this organism to the disease has been demonstrated.[6]

Nothing is known of the occurrence of *B. hodgkini* outside the human body. Clinical evidence indicates that it may enter through other portals than those situated in the gastro-intestinal tract. It is at least suggestive in this connection that so-called pseudoleukemia has been described as having occurred in swine;[7] in a horse;[8] in chickens;[9] in dogs,[10] and in sheep.[11] In the last animal the disease is claimed to be infectious and to be transmitted by insects.

GENERAL PATHOLOGY

Since the publication of Dorothy Reed's paper[12] twelve years ago, subsequent pathologic descriptions of the more common types of the lesions have been largely repetitions of her observations. With the realization that Hodgkin's disease is probably less limited in its clinical manifestations than was held at that time, and in the light of present conceptions, other less generally accepted lesions should be included in the category. These variations, however, are quantitative rather than qualitative and no radical additions can be made to Dr. Reed's splendid fundamental contribution to this subject.

For example, we have observed two adults showing clinical and pathologic characteristics of a type of lymphosarcoma who had a positive Hodgkin's blood picture, and from whose excised glands an organism identical with or closely related to the *B. hodgkini* was cultivated. In both the disease was first noticed in an enlargement of inguinal glands. Histologically these glands showed an almost complete obliteration of the normal architecture and a widespread proliferation of the "endotheloid" cells particularly marked in numerous foci which on fresh gross section gave an appearance suggesting miliary tubercles.

A man, aged 64, suffering from chloroma in its most typical advanced form, clinical and pathologic, presented a characteristic blood picture, and mediums on which were implanted pieces of excised glands gave pure cultures of what appeared to be the Hodgkin's organism. Macroscopically the greenish tint was evident in a fresh section; microscopically a proliferation of atypical large lymphoid cells and the presence of occasional "giant" endothelioid cells and numerous accumulations of blood pigment were particularly noticeable.

Still more surprising were the results of observations on a young physician who had for seven years been suffering from periodic attacks of a peculiar type of subcutaneous inflammation associated with pain, fever, delirium, leukocytosis, lymphangitis and lymphadenitis affecting one leg and causing a very gradual enlargement suggesting elephantiasis. His blood picture was that of Hodgkin's disease both between and during attacks. Cultures taken from obviously involved subcutaneous fat and from enlarged popliteal glands developed an apparently characteristic diphtheroid organism. Sections from the fat showed a definite perivascular inflammation, a mononuclear cellular infiltration and fixed tissue proliferation. Those from the glands showed a distortion of architecture, proliferation of endothelioid and lymphoid cells with scattered endothelioid giant cells and with a fine, diffuse, fibroblastic proliferation. A periadenitis of character similar to the perivascular inflammation in the fat was also present. Eosinophilic infiltration was lacking.

The successful cultivations of a similar organism from the spleen pulp after splenectomy in two cases in which a clinical diagnosis of early Banti's disease had been made are very suggestive, particularly since it has been held (Westphal) that there is a purely splenic type of the disease. In these instances the blood picture was not quite positive because of the absence of an increase in the size and number of the platelets. Microscopically there was the usual increase in stroma, destruction of the malpighian corpuscles and excess of the endothelioid cells. The cultivation of a characteristic organism from the glands in a case of lymphatic leukemia by Steele and the observations of the Fraenkel-Much granular bacillus in this disease are suggestive, but only suggestive, of a possible relationship of these diseases and not proof of their identity.

A middle-aged woman with moderately advanced arthritis deformans had, in addition to carious teeth wonderfully masked by most artistic crown work, obviously affected tonsils and enlarged inguinal glands. Cultures made from these glands developed a diphtheroid bacterium in pure culture, a section therefrom showed histologic changes indicative of Hodgkin's disease and virtually conclusive additional evidence was in the changes in her blood picture. As a corroboration of these findings may be cited the observation of another patient suffering from Hodgkin's disease in a subacute form who has had, but only since the affection became well established, recurrent attacks of multiple arthritis apparently attributable to no other infection.

Certain erroneous statements are frequently encountered, quotations from observations made when pathologic and clinical diagnoses differed from present standards. Some have a definite therapeutic significance and should be refuted.

It is incorrectly maintained that the capsules of lymph glands are never penetrated and that the periglandular tissues are therefore not directly invaded by the intraglandular granulomatous process. This capsular penetration is unusual and is only marked when the disease is progressing acutely. It has also been held that there is no periadenitis, hence no matting together of the glands or formation of adhesions to the skin or deeper structures. This too is incorrect. A periadenitis is virtually constant, probably developing from a lymphangitis as dissemination occurs, indeed virulent specific organisms are to be found in the periglandular tissues. These periglandular tissues, as pointed out by Fischer, are moist, vascular and friable in acute or recent involvements and are more apt to be dry, avascular and firm in the older and more chronic varieties. Thus, without evidence of secondary infection, intimate and dense adhesions to the skin occur and rarely may even lead to ulceration, according to Delbet.[13] The brawny induration of the skin present in several of our cases indicated that certain of the board-like subcutaneous inflammations

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Likewise more or less conspicuous and dense adhesions are found between the glands themselves and surrounding deep structures, often leading to an erroneous conclusion that a malignant type of infiltration has been encountered. The fluctuations in the size, consistency and degree of mobility so often noticed in the course of the disease are probably attributable to a large extent to waves of intensity in this periadentitis.

Contrary to a frequently repeated statement, foci of macroscopic softening do occur, without any secondary infection, though but rarely, and then particularly in the more acutely affected glands. When the process is older or more chronic there is a correspondingly increasing sclerosis which virtually becomes complete if life is sufficiently prolonged. Even when there is little to be found microscopically except fibrous tissue the organism can be cultivated with proper technic.

LIVING PATHOLOGY

Since the living pathology of any disease is a foundation for its therapy an attempt will be made to portray that of Hodgkin's disease as we have come to see it through superimposed pathologic and clinical spectacles.

When Wilks gave to Hodgkin's disease an intermediate position between cancer and tuberculosis he did all three an injustice. Hodgkin's disease may be said to possess all of the evil clinical characteristics and none of the virtues of both a malignant neoplasm and a malign infection. By the latter is meant an infectious process in which the balance of power between virulence and resistance is so delicately adjusted that it may be disturbed by factors frequently unrecognizable and usually negligible under other conditions. In the constant struggle for supremacy the powers of resistance ultimately succumb, but only after repeatedly having overcome the temporary advantages gained by relatively or actually increased virulence.

The offensive mechanism may be regarded as both neoplastic and inflammatory *in its effects*, attributing to the former, more particularly, the mechanical or physical injuries and to the latter more especially the toxic or physiologic.

With the establishment of a portal of entry, a lymphangitis partly toxic and in part due to the presence of bacteria marks the first extension of the disease toward the next lymphadenoid station, there to provoke a specific lymphadenitis. Perilymphangitis and perilymphadenitis are significant and constant features in the process. The entire progress of the disease is a repetition of similar steps, now more acute, now less, increasing numerically here by arithmetical there by geometrical progression, almost never constantly but in alternating waves of progression and regression due probably to periods of disproportion between the powers of virulence and resistance, and varying directly with the degree and duration of this inequality, being at times well localized, at others quite general.

Thus may be explained at the one extreme the extension between glands or groups of glands without any notable concomitant reaction, and at the other extreme those characteristic recurrent febrile attacks.

Three stages of the disease may thus roughly be outlined:

Stage 1. Process localized, physical effects slight, physiologic effects usually unnoticed, though a positive blood picture, an expression of toxemia, is already developed.

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Manifestly, in any given case, the variations in extent and intensity of the physical and physiologic effects present diverse problems in diagnosis, therapeusis and prognosis.

Apparently local and general resistance may be estimated to some extent histologically. The end-result so far as local recovery is concerned is fibrous tissue. An index of the general resistance can be found in the blood picture where there seems to be some direct significant relationship between a normal proportion of small lymphocytes and a favorable prognosis.

Sarcomatous metamorphosis in Hodgkin's disease has been described by Yamasaki,[14] Karsner[15] and Symmers.[16] A necropsy in the most acute and extensive case we have seen showed the parietal pleura, visceral pericardium, intercostal and pectoral muscles to be riddled with nodules. Macroscopically the appearance of malignancy was as distinct as was the picture of typical Hodgkin's granulomatous infiltration, microscopically. The possibility of malignant metamorphosis must be admitted, also its improbability, inasmuch as the causative agent is to be found in and to be cultivated from these so-called malignant metastatic lesions.

Confusing complications of secondary infections, other than agonal, occur and may make a certain diagnosis extremely difficult. When tuberculosis is engrafted on an established Hodgkin's process, as not infrequently occurs late in the disease, the histologic diagnosis is simple. Exceptional cases are reported, as cited by Fischer and Dietrich,[17] in which the two diseases were thought to have developed simultaneously. These should present little difficulty of recognition from a pathologic point of view at least. If any such cases have come under our observation they have been unrecognized. The greatest difficulty has been encountered when, apparently, Hodgkin's disease may have been engrafted on an old tuberculous adenitis in which there exists both caseation and secondary acute infection. We have two such cases under treatment. Glands obtained at two operations on bilateral cervical enlargements of one individual showed advanced tuberculosis with much caseation and some less chronic changes that could not with certainty be identified. Cultures give cocci, *B. subtilis* and in one tube a diphtheroid bacillus which could not be isolated. Definite evidence of an acute infection grafted on a Hodgkin's disease has not yet been established in our work.

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gienic surroundings may have some influence, particularly deficient personal cleanliness. No age is exempt, and contrary to the usual statement the sexes are about equally affected, though in males the disease is apt to develop in younger individuals.

Almost every conceivable condition supposed to reduce resistance has been suggested repeatedly as a predisposing factor. It is an interesting coincidence that diphtheria has been mentioned but once in the literature to which we have access.[18] Robust young persons are attacked while in apparently excellent health; more often perhaps, careful inquiry will disclose symptoms of some minor affection that will offer a satisfactory explanation for the onset or at least for the entrance of the infection.

The predilection of Hodgkin's disease to manifest itself primarily in an enlargement of the cervical glands led Trosseau to investigate all structures drained by these glands as possible portals of entry for infection. Murchison first directed attention to the tonsils which appear now to be the worst and most constant offenders. Not only may the disease be limited for a time to enlarged tonsils, as in a case reported by Delie,[19] and have a possible origin from a frank tonsillitis (Westphal), but it can affect these structures so slightly as to give no external evidence of abnormality. We have seen typical histologic Hodgkin's changes in tonsils which appeared normal clinically. Locating the disease in the tonsil is not sufficient, as this may be a secondary infection from other sources in the mouth and nasal passages. The possibility of carious teeth being portals of entry was recogniz d by Gowers. Rosenow has cultivated the *B. hodgkini* from peridental abscesses and sinuses.

In a fatal case with acute ethmoidal sinusitis, Bunting obtained this organism in pure culture from the affected cells. Organisms morphologically identical with those obtained in gland culture were found in smears made from secretions obtained from the upper nasal passages in a case in which the disease was present in the cervical glands. Chronic dacryocystitis, rhinitis, pharyngitis and otitis media are other lesions which have apparently been the starting point of the disease. We have seen two cases in which the portal of entry was certainly intestinal and others in which this was a possibility. In another the disease may have begun in the bronchial glands. Fraenkel and Much believe the infection may take place through the respiratory tract.

Preexisting adenitis has been noted frequently. Peacocke[20] observed the development of Hodgkin's disease in twin boys aged 4, both of whom had had measles complicated by adenitis. Other children in the same family had had measles but without adenitis. Delbet cites a case attributed to Billroth, in which the disease supervened on a lymphangitis and adenitis due to a bee sting. The possibility of this infection being added to a tuberculous adenitis has been mentioned above.

One patient with a primary enlargement of her inguinal glands had a profuse leukorrhea. Smears from the mucus from her cervical canal showed in considerable numbers an organism similar to that obtained in pure culture from an excised gland. Another had a sharp attack of cystitis preceding the onset, which is of greater significance since Fraenkel and Much observed an infiltration of ureter and bladder with Hodkgin's disease that they attributed to renal infection.

Skin lesions are fairly common. Fifteen per cent. of the cases studied by Westphal showed some skin affection and in 10 per cent. a lichen-like eruption preceded the onset. Trousseau's statement, so often repeated, that chronic irritations of the skin and mucous membrane may give access to a Hodgkin's infection, is evidently upheld. The site of the primary glandular enlargement would give a fairly definite regional location of the actual portal of entry.

The course of the disease depends on the relative virulence of the infection. In the acute forms death may result in a few (two to four) months; in the most chronic, life may be prolonged up to five years. A feeling of lassitude may precede recognition of the disease but more often the glandular enlargement is a fortuitous observation when the general health is good, notwithstanding there has been an absorption of sufficient toxin to alter the blood picture. During the early stage while the disease is localized in the primarily affected group of glands there is so little effect on the general health that proper attention is often neither sought nor given when it is sought. In acute cases there is a rapid transition into an intermediate stage where dissemination is manifest, physical and mental depression more constant and anemia, due to a toxic hemolysis, becomes evident. This transition into an intermediate stage in chronic cases is usually gradual and marked rather by the accidental discovery of additional glandular swellings more and more remote from those first affected. Exceptionally, following a period of chronicity there is a sudden explosive dissemination, after which a more acute course is run, suggesting a very rapid diminution in the powers of resistance of the individual. One of the most strikingly characteristic features of the disease, to be seen in the intermediate stage particularly but occurring if less obviously in the others, is the alternating periods of exacerbation and remission in the intensity of the process. During the periods of progression, the conditions manifested by the acute forms are simulated somewhat, there is more effect on the general health, the groups of glands become larger and the individual glands therein less differentiable and movable and a transient sensitiveness may develop. The overlying skin is less movable, may be boggy and even become reddened. These periods are relatively short and escape the notice of unobserving patients, though most all can recall the periods of remission when there is generally a marked diminution in size of the glandular tumors. This decrease in size may be so great and so persistent and so often accompanied by a sense of well-being that any treatment then in vogue, though the same improvement may be entirely spontaneous or follow an intercurrent acute infection, is apt to be considered causative, and another cure for Hodgkin's disease thereby discovered and unfortunately is usually promptly reported. Sooner or later another recrudescence appears, usually more vicious than those preceding, but now uncontrollable by the measures formerly so efficacious, and not infrequently introducing a rapid, final decline. Those later details, however, quite constantly escape publication.

During the intermediate stage extension takes place from one cervical triangle to the other, then to the

18. Westphal: Arch. f. klin. Med., 1893, li, 83.
19. Delie: Rev. Hebd. de Laryngol., 1908, ii, 499.
20. Peacocke: Tr. Roy. Acad. Med., Ireland, 1905, xiii, 1.

neighboring axilla, the opposite side of the neck, the mediastinum, the opposite axilla, the spleen, the groins, the liver and retroperitoneal glands, in about that order. When the involvement has become widespread, the effects of increased intoxication and of pressure makes themselves evident in the terminal stage. Here is noted the grave anemia that may simulate the pernicious type, and the marked cachexia and emaciation, the tendency to purpura and to repeated hemorrhages from the mucous membranes due to a deficiency of blood platelets resulting from exhaustion of the bone marrow, febrile attacks, occasionally of the relapsing (Murchison) type, pleural and pericardial effusions, ascites, obstruction to blood and lymph circulation and to respiration. It is during this late stage that miliary tuberculosis so often develops and is unrecognized until revealed at necropsy.

No description can be given of the nature and progress of the less common types of Hodgkin's disease that are not associated with glandular enlargements nor those varieties that are just beginning to be recognized as such through bacteriologic and hematologic methods.

DIAGNOSIS

It is impossible to escape a recognition of the very pronounced similarity between the clinical aspects of Hodgkin's disease and those of many malign neoplasms especially in the tendency to dissemination and to recurrences, and the ultimate general effects on the individual. In no disease is a prompt and particularly an early positive diagnosis of more consequence in successful treatment. This most important part of the therapeutic problem has, we believe, become relatively simple.

Without detracting in the least from the great importance of accurate history taking with its proper interpretation and a most thorough and complete examination,[21] these observations alone will not lead to an indisputably positive recognition of the disease, at least while a cure is still possible or probable. Final proof comes from the laboratory and there must be a competent objective observer who can recognize and construe slight variations, hematologic, bacteriologic and histologic. At the present time a satisfactory blood examination gives the most reliable immediate diagnostic evidence. Histologic studies cannot be equally positive until the early minute pathologic appearances of borderline affections are definitely established, granting that this may eventually be accomplished, and can never be possible in those less common types which do not manifest glandular swellings or easily accessible involvement in unimportant tissues. Nor can bacteriologic methods be uniformly satisfactory. Diphtheroid organisms are ubiquitous. Contaminations may occur under the most rigid technic, and more important still, the organism may take ten days to grow satisfactorily.

Material for histologic study can never, and for bacteriologic study, seldom, be obtained without the excision of a test gland or some affected tissue. Personal observations would have convinced us, even were the proof not clearly written in the reported experiences of all who have treated this disease, that partial excisions were accompanied by such actual and not hypothetic dangers of dissemination that "test excisions" are absolutely contraindicated unless the stage or the character of the disease is such that the only hope lies in vaccine therapy, should its value ever be undisputably established. Even under these conditions, using a polyvalent stock vaccine may be a safer method than taking some undue chances to obtain an autogenous culture.

Since Bonfils (1856) first pointed out that there was no increase in the white blood corpuscles in Hodgkin's disease and this fundamental observation was incorrect, it has been held that there are no characteristic blood changes in this affection, and that such as were observed marked either a secondary infection or a transition to lymphatic leukemia.

The essential features in the blood picture that have proved to be almost pathognomonic with but few conditions to be excepted, can be summarized briefly.[22]

There are two distinct types, an early and a late, showing a constant characteristic increase in the number of platelets (unless exhaustion of the bone marrow occurs) with abnormally large forms and either a relative or absolute increase in the so-called transitional cells. In the early type the leukocytes are usually less than ten thousand. Very early there is a moderate increase in the basophils, and when the disease is well established the eosinophils are slightly increased. The polymorphonuclear neutrophils remain within the usual limits, the lymphocytes at or slightly above the normal. The late type shows a leukocytosis which may reach one hundred thousand, the neutrophils are relatively increased to a percentage of from 75 to 92 and the lymphocytes are reduced to 5 per cent., frequently even less. The transitionals, the only other cells found in any numbers, are usually above 8 per cent. unless the leukocytosis is very high, when they may be relatively fewer, but still exceed the lymphocytes in number. This late picture is a result of the intensity of the disease rather than the extent of involvement and is usually largely dependent on duration for its development. Not only has this blood picture held clinically, having been confirmed in every instance either histologically or bacteriologically or both, but has appeared in monkeys inoculated with the living Hodgkin's bacillus and in one normal individual injected with the same, but killed, bacteria. Notably in one case of chloroma and two of so-called lymphosarcoma, the blood examination was positive and was confirmed by the cultivation of typical organ-

21. A complete examination will determine the details of treatment and should include careful investigations by trustworthy specialists of the mouth, throat and nose, including the accessory sinuses, and may be satisfactorily conclusive only after skiagraphs have been made. No thoracic examination, however carefully done, is adequate until suitable roentgenograms have determined the absence of involved mediastinal glands or their size and location if present. When there is slight involvement in the anterior mediastinum, it is often unrecognizable by other methods, and this is especially true of the posterior which is invaded more frequently than is supposed. Moreover, this affords the only accurate method of gaging the efficacy of treatment even when the intrathoracic involvement is sufficient to be recognized by ordinary methods of examination. No great concern need be given to actual lung involvement as this is a manifestation of a late and probably a hopeless stage.

22. It is quite probable that the reasons why these characteristic variations in the blood picture have so long escaped detection, depend on the technical methods followed in making and staining the blood smears and on the varying conceptions of the proper differentiation of the groups of leukocytes. Thus Litten is quoted by Fischer as having noted the platelet increase in 1895, an observation which Fischer attempted unsuccessfully to confirm, but which was upheld by Selenew who also remarked the very large forms. It remained for Bunting (Bull. Johns Hopkins Hosp., 1911, xxii, 114) to show the constancy and evident source of these structures in Hodgkin's disease. Lymphocytosis occurs and has been recognized by many observers, but is of little diagnostic importance since there is a constant and marked lymphopenia after the early stage. This was commented on by Steiger (Berl. klin. Wchnschr., 1913, i, 2129) who also repeated the old observation of a tendency to eosinophilia, which may be so high (over 20 per cent.) as to suggest the presence of some animal parasite and yet be due, as Lincoln's case has shown (Lincoln: Boston Med. and Surg. Jour., 1908, clvii, 677) entirely to an atypical manifestation of the disease. The leukocytosis which occurs in the late stages has been noted repeatedly.

isms from tissues that histologically alone might not have been properly diagnosed.

Confusion has arisen so far in but one class of cases, those of tuberculous adenitis with an acute (coccal) secondary infection. Here, too, histologic and bacteriologic controls can fail to be conclusive. Differentiation from uncomplicated tuberculous adenitis is seldom difficult, the blood pictures are distinct and the reaction to tuberculin usually confirmatory. We have seen a positive von Pirquet reaction but four times. One patient had a clearly definite apical lesion, one, an adult with so-called lymphosarcoma, was without a demonstrable tuberculous focus, and the other two had preexisting tuberculous adenitis. In an acute case miliary tuberculosis was discovered post mortem and there had been a negative tuberculin test two months before. This man showed shortly before death a temporary transition to what is commonly accepted as a lymphatic leukemia blood count.

TREATMENT

However constant has been dispute as to the name or nature of the disease, there has ever been unanimous agreement that it was inevitably fatal in less than five years. Evidently, therefore, successful therapeutic measures would have to differ from any hitherto employed and must find their application in combating the various pathologic processes manifested as the disease progresses, while attempting at the same time to protect and enhance such curative physiologic reaction as could be recognized clinically and pathologically. Five years elapsed after our investigations began before the *B. hodgkini* was first isolated and its probable etiologic relationship established, so that we had opportunity to try other therapeutic methods than those dependent on a specific bacteriology. Our working hypothesis has been to accomplish (1) an exclusion of all possible liability to reinfection, hence a removal of the primary source of infection and its portal of entry; (2) the most rapid elimination of at least the major portion of the diseased tissue with the bacteria and toxins contained therein, in order to prevent further dissemination and to place the balance of power in favor of individual resistance, wherefore its surgical extirpation when conditions permitted; (3) a destruction of the remaining bacteria by any and every means, especially the Roentgen ray, hygiene, and more recently vaccine therapy has been employed; (4) the conversion into fibrous tissue by hygiene and the Roentgen ray of such irremovable abnormal tissue as cannot undergo resolution; (5) and finally, to continue treatment as circumstances seem to indicate until a clinical and roentgenologic examination and a normal blood picture indicate a cure has been of at least a year's duration.

The measures to be described hereafter have been found to give the best results, results so encouraging at present that their presentation seems to be justified. Every detail has been found to be of such importance that the reasons for the application of each will be given lest any be considered unessential and be slighted or discarded at the cost of the utmost possible prolongation of life and comfort of some individual. It should not be supposed that the procedures are equally applicable to all cases whatever be the stage of the disease or evident virulence of infection. Here again be it known that the extent of involvement is less significant than its location and nature, which can only be revealed by the detailed examination already outlined.

1. *Removal of the Source of Infection*—A. Where involvement is primarily cervical a complete pericapsular tonsillectomy in definitely and invariably indicated even if the tonsils appear perfectly normal. In addition the teeth, nose, ears, eyes and accessory structures must be excluded as the site of primary infection, or properly treated. B. If the primary glandular involvement is extracervical, a search must be made for a source of infection in the area thereby indicated and suspicious lesions treated appropriately. These measures should be instituted immediately and when possible carried out under local anesthesia, observing, so far as possible, the principles underlying the treatment of malignant tumors.

2. *Extirpation of the Major Portion of the Disease.* Excision of the cervical glands can be done as thoroughly as in the block dissection advocated by Crile, with the possible exception of preserving at least a part of the eleventh nerve and observing otherwise all of the precautions advocated by Halsted to safeguard dissemination. This can be accomplished without unduly reducing resistance, and we believe with less risk to the individual, than attempting to treat them otherwise. Any dissection less complete and careful is positively contraindicated.

The glands will be found to be more or less adherent, in some instances so adherent that their separation from the subclavian vein will be difficult, from the internal jugular so formidable, that this vein should be excised unless there be any question of the patency of its fellow. Glands adherent at the subclavian-jugular angle may be extremely trying to extirpate, but their removal is imperative in that this last source of mediastinal infection must be excluded. In spite of every effort we have cut the thoracic duct in two individuals. In one it was ligated, in the other the discharge of chyle was finally controlled by pressure. Neither manifested any ill effect.

The entire area exposed should be treated thoroughly and actively with full strength tincture of iodin and drained, as it is inconceivable that all contamination can be avoided. This additional irritant also increases the immediate inflammatory reaction, a very desirable feature, particularly as it has no effect on the ultimate functional or cosmetic result. Exposures of the entire wound area to the Roentgen ray should be started not later than the second day, preferably within a few hours of operation and continued at intervals of a few days to the limit of skin tolerance, for reasons that will be given later.

Such radical treatment will be criticized particularly by those wanting in surgical sympathy. In explanation be it known that any less thorough or even as thorough excision, without disinfection and subsequent radiation, may be followed by a recurrence, which, as Reed has reemphasized, can be more extensive than the original involvement. Recurrences in Hodgkin's disease are as little to be desired as in carcinoma. We have seen other glandular enlargements (for example, axillary, opposite cervical) begin their final decline *only after the removal* of this source of infection or drain on the powers of general resistance when the treatment was otherwise unchanged, just as we have seen some cervical enlargements permanently disappear under the Roentgen ray *after* tonsillectomy. These observations have been assumed to

indicate that the balance of power has been changed and have been sufficiently numerous and well controlled to convince us that such treatment may determine the ultimate result no matter what other therapy is employed.

As yet we have not seen the same beneficent effect on mediastinal involvement, though apparently complete and final resolution has followed in axillary glands that have been probably, in size, at least, as extensively involved. The explanation seems to lie in the comparatively slight effect of the rays on intrathoracic tissue. Progress in intrathoracic involvement has been checked in two individuals if the radiographic evidence is conclusive. The general health has remained unimpaired in one boy for over six months and one girl appears radiantly healthy after four months, but in both the blood findings are ominous. Mediastinal infection may occur early or be absent even when both sides of the neck and both axillae have shown extensive enlargements for months. The appearance of intrathoracic involvement, in our experience, has been of more sinister significance than a moderate splenic or hepatic enlargement. Indeed, these may indicate, when other conditions are favorable, but an extensive reaction on the part of the defensive mechanism. Therefore we emphasize the extreme importance of protecting the mediastinum from any infection by extension from the neck or axilla, particularly before, but also even after intrathoracic involvement has occurred. We take this to mean that when the excision of the primarily affected cervical glands is not followed promptly by the progressive resolution of secondarily enlarged glands which may infect those in the mediastinum, that these glands also should be excised.

Axillary dissections should be as extensive and as thorough as the cervical. This requires division but not excision of the pectoralis major and resection of the minor. The nerves supplying the pectoralis major and the long thoracic nerve should be preserved. Involved glands have been found anterior to the major pectoral, between it and the minor and extending upward along the vein to the falciform ligament. An incision can be made along the anterior axillary line, extending thence if necessary a short distance along the lower margin of the clavicle that will give adequate exposure and not injure the breast tissue in women nor be cosmetically objectionable. Subsequent wound treatment should be the same as after cervical excisions.

No case in which the inguinal glands were affected primarily has come at a stage when radical extirpation was thought to have been indicated. The same general plan should be followed to protect the retroperitoneal as the intrathoracic lymphatics.

Patients presenting themselves in the later stages of the disease, with advanced involvement, intrathoracic or intraperitoneal or both, have been subjected to no radical treatment and this has probably been a mistake, at least in exceptional cases. Those in fairly good general condition and in whom the blood changes do not indicate the latest stage may be benefited materially by thus starting a regressive phase when other methods may help greatly. Without the initiative of this wave of regression those procedures have been futile. In one apparently hopeless case the patient has shown remarkable progress during the period between the excision of glands and the final preparation of her vaccine. This particular organism grew very reluctantly, and the excision removed considerable tissue from neck and groin because the periglandular adhesions made safer and easier the extirpation of groups of glands. Had she received any treatment in this interval there might be less justification in attributing some causal relationship to this excision.

3. *Destruction of Bacteria by the Roentgen Ray.*—No permanent cure has ever been obtained solely by the use of these rays. Numerous instances of marked improvement have been noted since the observations published by Senn.[23] Pfeiffer[24] made a very careful and extensive study of the value of Roentgen therapy in Hodgkin's disease and found the usual discouraging facts; after varying intervals of great improvement recurrences were inevitable and finally became uncontrollable. The reasons for its marked temporary efficacy have, to some extent, been discovered. A very resistant culture of *B. hodgkini* implanted on the most favorable mediums was destroyed by one exposure under conditions identical with the therapeutic dose, so long as these cultures were not much over 5 days old. Later than this the involution forms that develop so characteristically are more resistant, and after exposure to the ray the control subcultures were positive. This effect is not due to changes in the mediums, which after the same exposure supported subsequent cultures apparently equally well.

The patient from whose tissues the *B. hodgkini* was first grown in 1912, had, low in her right axilla, two glands a few inches apart. One was excised as a control. Cultures were positive, sections showed the usual moderately chronic process. The other gland was subjected to the usual radiotherapy and later excised.[25] Cultures this time were negative, when the technic had been developed so that positive cultures were being obtained constantly from tissue that was found histologically to show the disease. Comparison of the sections, which unfortunately were not stained and studied for the presence of bacteria, showed increased sclerosis, hyaline degeneration and an abundance of the "endothelioid" cells in excess of what could have been expected by natural reaction in the elapsed time. Moreover, there was present in the periglandular tissue, increase in fibrous elements as well as infiltration with round cells and neutrophils.

The effects of the ray immediately after operation are of the same character, only possibly less intense, than when given after excisions of malignant neoplasms with reflected skin flaps as advocated by Crile. There is a remarkable increase in the inflammatory reaction shown by the excessive serous exudate and superficial deposition of fibrin, the overlying skin is edematous and healing correspondingly delayed. After several months the evidences of the excess irritation disappear completely, the skin becomes soft and movable, pigmentation disappears, the scars of incisions are narrow and pale and there is a much reduced liability to keloidal changes.

Burns have resulted exceptionally and are probably not always to be avoided even under the most skilful administration and accurate dosage of the rays. We have been singularly fortunate in having the coopera-

23. Senn: New York Med. Jour., 1903, lxxvii, 655.
24. Pfeiffer: Beitr. z. klin. Chir., 1906, l, 277.
25. Invaluable lessons were learned from this patient who, with the one exception noted below, is the last who has been subjected to meddlesome surgery. As a result of partial excisions the disease was so spread in the axilla as to demand a complete axillary dissection to protect the mediastinum, which has fortunately remained free.

tion of exceptionally competent therapeutic roentgenologists who will subsequently make a formal report of their work and observations. It is a pleasant duty to acknowledge an indebtedness to Dr. Foerster and Dr. Baer for their unflagging interest in our work and generous care of these patients, but particularly for having proved the value of this phase of treatment, possibly as important as any other detail, when given rationally as to time, place and method.

4. *Hygiene.*—Whatever treatment may be selected, evidently the native individual resistance will be the fundamental factor in determining the outcome. Nothing that will improve general physiologic efficiency should be omitted as everything should be that might provoke physiologic deficiency. In this connection may be considered the question of drugs. Tonics are often indicated. Arsenic is no more specific than iron. The uses of maximum doses of Fowler's solution internally, subcutaneously or injected directly into the affected glands has been wondrously exploited. Its value is not more than transient. Marked and prompt improvement has followed the administration of salvarsan intramuscularly and intravenously, as in a case treated by Galland,[26] another treated by Dr. L. F. Barker (personal communication) and in one of our series, but these effects are only fleeting and when recrudescence appears it is unaffected by further administration of this remedy. No indication has been found for the use of benzol (benzene C_6H_6). The treatment of one case by this means has been recorded,[27] but the diagnosis was not established and only the early results were reported.

The mixed toxins of erysipelas and *Bacillus prodigiosus* so warmly and authoritatively advocated by Coley have not been tried, in spite of the knowledge that almost complete if temporary disappearance of glandular swellings has followed acute intercurrent infections, notably in one rather advanced case after a severe scarlatina. The belief that Hodgkin's disease was an inflammation, and a disinclination to add to the intoxication in view of the lack of evidence that any permanent benefit has thus been obtained, even in Coley's cases,[28] was considered sufficiently contraindicative. In a personal communication Dr. Coley has stated that a patient under the care of a former assistant was treated in the Ottawa hospital and has remained well for six years.[29] In this instance, while the clinical diagnosis appeared probable it was not confirmed pathologically and must therefore be, to some extent, questionable.

5. *Vaccines.*—Successful active or passive immunization in the light of the constant failures that have followed all other therapeutic methods, has been a stimulating hypothetic possibility. Encouraging results are not wanting, neither are the discouraging, at least so far as vaccination is concerned. Improvement has followed subcutaneous injections of both polyvalent stock vaccines and the autogenous, but not in every case, and in some at least, the same old discouraging sequence of events ensues and subsequently an uncontrollable recrudescence leading rapidly to death gives the impression that history is repeating itself and that another "cure" may have to be admitted to the list of failures.

In no case that we have seen treated by vaccination has there been a favorable result in the rapidity, extent or permanence of improvement that has not been equalled at least by observations on similar cases treated essentially similarly except for the vaccine administration.

One boy whose history will be given has had vaccine treatment over a period of two months for a slight mediastinal involvement, the only discoverable manifestation of a recurrence. Stock vaccines prepared by Dr. Rosenow, who generously forwarded an adequate supply, and by Dr. Clara Moore at the University of Wisconsin according to Dr. Rosenow's directions, have been given at five-day intervals, to the total number of 62,000 million bacilli. There has never been a local or general reaction and his health has remained good. The involvement has remained stationary but in addition he has been receiving the Roentgen ray in maximum doses. His blood is beginning to show features of the late stage.

Another patient, whose history also will be given, had, in addition to extensive mediastinal involvement, a small group of involved glands in her right axilla. She received subcutaneously over a period of four months 18,000 million bacilli of an autogenous vaccine. There was improvement in her general health, increase in weight, but not more than could have resulted without the use of vaccines. No marked general reactions resulted at any time, though subcutaneous nodular induration appeared at the sites of the injections. Roentgenographic and physical examinations showed no diminution in the mediastinal disease and her blood picture remained unchanged. It became essential to know what had occurred in the axillary glands as they had not changed noticeably in size or consistency. A partial excision was done and the glands were removed, followed by the maximum doses of the Roentgen ray which had not hitherto been given at this area. These glands were not manifestly different microscopically or macroscopically from those obtained from her opposite cervical region, three months before; in fact, the microscopic pictures were virtually identical.

There is no desire to detract from the possible value of vaccine therapy in Hodgkin's disease, but such observations as we have been able to make, and every effort to obtain proper controls and to maintain an objective point of view has been exerted, will permit of not more than a Scotch verdict. Vaccination in our hands cannot be shown as yet to have exerted marked if any influence on the ultimate course of the disease, but admittedly it is too soon to pass final judgment. If there is an ideal method of vaccination for Hodgkin's disease we believe it is yet to be established.

6. *Conversion of Abnormal Tissue into Fibrous Tissue.*—This is desirable when resolution is impossible, in order to remove any tendency to pressure effects and the liability to subsequent infections, of whatever nature, in structures of abnormal powers of resistance. Conversion into fibrous tissue by no means indicates that such accumulations will be permanent. It is quite probable that when this dense abnormal tissue is not subjected to constant physiologic strain it undergoes some form of degeneration leading to ultimate absorption as seen for example in certain types of pancreatitis and intra-abdominal adhesions. The best possible physical condition and Roentgen rays are the only methods that have been supposed to aid this transformation.

26. Galland: Med. Press and Circular, 1911, New Series, xcii, 43.
27. Lawson, G. B., and Thomas, E. A.: A Case of Hodgkin's Disease Treated with Benzene, THE JOURNAL A. M. A., Dec. 13, 1913, p. 2157.
28. Coley: Am. Jour. Surg., 1908, lxvii, 127; Surg., Gynec. and Obst., 1908, vi, 649.
29. Coley: Surg., Gynec. and Obst., 1911, ix, 174.

SUPPLEMENTARY TREATMENT

It has been so well established that patients may be apparently well and remain so even up to five years, only to succumb to an acute, explosive recrudescence, that there is positive indication for prolonged after-treatment, periodically repeated. The exceeding importance of protecting the general health cannot be overstated. Periods of even slight mental and physical depression have preceded, if they have not introduced, recrudescences. Except in two cases, in which the blood picture returned to normal and has remained there, we have not seen a single instance in which this evidence of a persistence of the infection was eliminated. Routine blood examinations are made as the patients report for observation, either at stated intervals of a few months or whenever untoward symptoms are suspected. The blood count has been found to give the earliest and surest evidence of an impending recrudescence or of the persistence of some focus of infection that had escaped detection. Apparently, recurrences of the disease, if taken very early, may be controlled by appropriate measures, whereas, if the infection increases to any extent in virulence the characteristic rapid fatal progress is to be expected.

REEXCISIONS

Glandular recurrences have shown two types. One that follows soon after incomplete excision is of the softer, more cellular and acute variety. The other appears at a longer interval, perhaps more than a year after complete excision and repeated courses of the Roentgen ray, and is more chronic in every way, yet reexcisions usually done under local anesthesia have produced improvement, local and general, otherwise unobtainable. Removal of early recurrences is at times justifiable, but seldom is to be expected to help materially and has led to the opinion expressed by Fischer that reexcisions are always unwarranted.

During the period of quiescence, when there is no longer any external evidence of the disease, should be the time, hypothetically at least, when the administration of vaccine virtually prophylactically might be expected to be of the greatest benefit. Under such conditions the only judgment as to immediate improvement would have to be based on blood changes, and as the vaccine itself affects the blood picture nothing definite can as yet be stated. There has been no improvement noted in the return toward normal; either there has been no change or there was evidence of some degree of unfavorable variation.

One must constantly bear in mind that the safety of these patients lies in unremitting watchfulness and attention to details. The fact that otherwise there must be a certain fatality should lead to persistence to find the therapeutic measures indicated and give one courage to put them to practice.

RESULTS

A cure or, better, a recovery can be considered as established only when there is no trace of the disease, including a normal blood picture, at least five years after the last manifestation of the infection. Recrudescence has occurred after a shorter period of apparent freedom. A case recorded by Eve,[30] had an interval of six years between a primary operation and the first recurrence but the diagnosis was not established.

30. Eve: Brit. Med. Jour., 1897, i, 584.

THE BEGINNING OF SYPHILIS*

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"By the historical method alone can many problems in medicine be approached properly. For example, the student who dates his knowledge of tuberculosis from Koch may have a very correct, but a very incomplete, appreciation of the subject. Within a quarter of a century our libraries will have certain alcoves devoted to the historical consideration of the great diseases, which will give to the student that mental perspective which is so valuable an equipment in life." —*Osler.*

The history of syphilis is unique among the records of great diseases. For, unlike most diseases, it does not gradually emerge into the historical records of medicine as its characters become recognized, but appears on the stage of history with a dramatic suddenness in keeping with the tragic reputation it has made—as a great plague sweeping within a few years over the known world. Syphilis is the one disease whose history begins with a definite date. That date is the date of the discovery of America. It happens also that the ten years from 1903 to 1913 were fruitful of discoveries of such fundamental importance in syphilis that they represent an epoch—the most important epoch—in the history of our knowledge of the disease.

LACK OF KNOWLEDGE OF SYPHILIS AMONG THE ANCIENTS

Local genital diseases have been recognized from ancient times; references to them are numerous in both Occidental and Oriental literature. It is, however, a very striking fact that in all medieval and ancient literature, although sexual matters are favorite topics and are considered frequently and with freedom, there is no reference to a disease of the genitals which is followed by constitutional symptoms. Many diseases involving the skin are easily recognized in the descriptions of medieval and classical literature, but in spite of the most painstaking and zealous searching of all literary evidence, no single authentic document has been found in ancient literature in which a description of syphilis can be recognized. Prior to the last years of the fifteenth century no description of the syphilitic syndrome existed.

THE EPIDEMIC OF SYPHILIS AT THE END OF THE FIFTEENTH CENTURY

In the autumn of 1494, Charles VIII of France, with an army composed of mercenaries from all parts of western Europe, invaded Italy for the conquest of Naples. Italy, which at this time had reached the height of effeminate luxury and was weakened by the rivalries of her numerous states, was able to make no effective resistance to the well-organized forces of Charles; and the progress of his army through the peninsula was more of a triumphal march of debauchery than a serious military campaign. Charles was able to make good his claims to the throne of Naples and to set up his court for permanent occupation. In a short time, however, his army became so

* This article is the first chapter of a monograph on "Syphilis," being one part of a volume, now on the press of the American Medical Association, commemorating the completion of the Panama Canal and reflecting what medicine has done to make the canal possible. The article on Typhus Fever by Vaughan, published May 29, 1915, was part of a monograph on "Infection and Immunity," also to be included in this book. The other articles contained in this "Commemoration Volume" are by Drs. W. J. Mayo, Simon Flexner, E. O. Jordan, Major General Gorgas and Mr. F. L. Hoffman. The book, of some 380 pages, will be issued about July 1. Price, $2.50.

weakened through disease and dissipation that the Neapolitans were able to assert themselves and drive it out. The retreat of Charles and his soldiers from Italy in the summer of 1495 was little better than a rout, and the various troops were left ultimately to return to their countries in their own disorganized way.

THE BEGINNING OF THE EPIDEMIC

All contemporaneous records are at one in attributing the epidemic of syphilis which began in Italy at this time to Charles' army, and the quick spread of the disease over Europe to the scattering of his troops. Syphilis, if it existed before this time, was unrecognized. It was at the appearance of this great epidemic that physicians and laymen alike became aware of a disease of the genitals, which was followed by constitutional symptoms and of which they had no previous experience.

THE SPREAD OF SYPHILIS OVER EUROPE

The development of syphilis in Italy can be traced in the local chronicles of the time step by step with the progress of Charles' army, and with the scattering of his soldiers it went over western Europe in a rapid-spreading epidemic. It appeared in France and Germany and Switzerland in 1495, in Holland and Greece in 1496. It spread to England and Scotland in 1497; to Hungary and Russia in 1499.

Iwan Bloch, to whom all students are indebted for bringing together the known facts concerning the early history of syphilis, gives many contemporaneous references testifying to the interest excited by the new disease and to the importance attached to it. Thus, in 1496, the Parliament of Paris decreed that all persons infected with the disease should leave the city within twenty-four hours. In 1496-1497 prophylactic measures against the disease were attempted at Nürnberg. On April 21, 1497, the town council of Aberdeen, Scotland, ordered that, for protection from the disease which had come out of France and strange parts, all light women desist from their vice and sin of venery and work for their support, on pain, else, of being branded with a hot iron on their cheek and banished from the town. Six months after the Aberdeen order, the Scottish Privy Council passed an edict ordering all inhabitants of Edinburgh afflicted with syphilis into banishment to the island of Inchkeith near Leith. In 1496, Grünpeck, a German writer, mentions that English soldiers in Italy had acquired syphilis. The archives of Bristol indicate that the disease was introduced there in 1498 from Bordeaux, and hence was called the Bordeaux disease. In the Breviarie of Health, by Andrew Boorde, published in 1575, it is stated that "In English Morbus Gallicus is called the French pocks, and when that I was young they were named the Spanish pocks."

Indeed this tendency to shift the responsibility for the disease on others by giving it their name, appears all through the early references to it. The Italians called it the Spanish or the French disease; the French called it the Italian disease; the English called it the French disease; the Russians called it the Polish disease; the Turks called it the French disease; the Indians and the Japanese called it the Portuguese disease. And, as we shall see, the first Spaniards who recognized the disease called it the disease of Española, which meant at that time the disease of Haiti.

ITS SPREAD TO THE ORIENT

In quick sequence the disease spread over the rest of the known world, carried by the great voyagers of that period. The Portuguese soon carried it to Africa and the Orient. The researches of Okamura and Susuki for Japan and China, and those of Jolly and others for India, show the introduction of syphilis into these countries only after contact with Europe. The Indian, Chinese and Japanese languages had no native names for the disease, and, like the Europeans, the Orientals gave it names indicating its foreign origin. In India the disease was first recognized in 1498, after the arrival of Vasco de Gama, who had left Portugal in 1497. It appeared in Canton, China, in 1505, after the visit of Europeans. It was not recognized in Japan until 1569, when its appearance at Nagasaki was attributed to Chinese or Portuguese sailors.

There is thus an accurate historic record of the startling spread of syphilis over the known world in a few years after 1495; and from that time it has everywhere been endemic. No similar record exists of the sudden establishment of any other great disease among the larger part of the earth's inhabitants.

THE SEVERITY OF THE FIRST EPIDEMIC

The early recognition of syphilis and the prompt record of its spread over the civilized world are to be accounted for not so much by its newness, although it was everywhere recognized as a new disease, as by its severity. It amounts almost to an axiom in pathology that when an infectious disease first appears among a people—finds lodgment in a virgin soil—it rages with unwonted severity. This has been noted many times—with measles, scarlet fever, smallpox, and with syphilis in modern epidemics among isolated peoples. And this was a characteristic of the great epidemic of syphilis which occurred at the end of the fifteenth century.

In syphilis as ordinarily seen, its early manifestations are trivial in character, so trivial in fact that they are dangerously deceptive to the careless. The symptoms are mild and the patients are not acutely ill. All evidence, however, points to the severe character of the disease during this first epidemic. The cases ran an acute febrile course accompanied by symptoms of such severity as are now seen only in very unusual cases. There were high fever, intense headache and bone and joint pains; early skin symptoms so severe that they simulated smallpox; great prostration, and very frequently a fatal ending early in the disease, a result that is the rarest occurrence at present. This epidemic had all the characteristics of a virulent plague. With the loose morals of the time, however, syphilization of the world was rapid, and contemporaneous evidence, Fracastoro for example, indicates that the severity of the symptoms of early syphilis rapidly diminished; and within fifty years the disease had assumed the character with which the world has since been familiar.

EARLY SPECULATION AS TO ITS ORIGIN

The origin of syphilis was, at the time of this great epidemic and until recently has still been, a subject of much speculation and discussion. In keeping with man's superstitions, particularly at the time of the appearance of syphilis, it has been attributed to every imaginable source; to vice and sin, and the anger of

Providence; to dirt and beasts; to the elements and the influence of the heavenly bodies. Much unsuccessful effort was made to demonstrate its presence in Europe in the middle ages and earlier, although contemporaneous opinion pointed to the Spaniards and Americans for its origin. Later, as the disease became familiar and men lost sight of its sudden appearance, opinion veered round to the view that it had always existed in Europe. It is only within the last thirty years that its American origin has been practically demonstrated.

THE EVIDENCE OF ITS AMERICAN ORIGIN

The bald fact of the sudden appearance of syphilis shortly after the return of Columbus from his first voyage might easily suggest and lend plausibility to the theory of the American origin of the disease. The presence of Spanish adventurers in Charles' army would furnish the connecting link between Barcelona and Seville and Columbus' crew and the Italian epidemic. But in addition to the chronologic sequence of Columbus' return from America and the first recognized epidemic of syphilis in Europe, there are numerous other facts which confirm the American theory of its origin.

As we have seen, certain of these facts stand out prominently in the great epidemic:

The disease at the time was recognized as a new disease.

Names for it did not exist, and as it spread over Europe, men were hard put to give it a designation. The same was true on its appearance in the Orient.

The development of the great epidemic was definitely associated with the Italian campaign of Charles VIII, and its rapid spread over Europe was associated with the breaking up of his army. Its origin was recognized as being southwestern Europe. Even with the first outbreak in Italy, Spain was pointed to as the country whence it came, and the Spanish soldiers of Charles' army were incriminated as the authors of its distribution.

The disease pursued a course of unusual severity and spread over Europe with the rapidity of an infectious disease among people unprotected by any previous infection with it.

ABSENCE OF EVIDENCE IN EARLY EUROPEAN BONES

Parallel with the absence of any pre-Columbian documentary evidence of the existence of syphilis, is the absence of any evidence of syphilis in pre-Columbian European or Oriental bones. Bones withstand time, and the ravages of many diseases can be clearly traced in ancient bones that have come down to us. Syphilis is one of the diseases which leaves frequent, unmistakable evidence of its existence in bones; and if syphilis existed in Europe before the discovery of America it would be expected that evidence of it would be abundantly found in the great collections of prehistoric, ancient and medieval bones that exist. With the licentiousness of Rome and of the Dark Ages, syphilis would have been expected to leave a broad trail in the bony remains of those times; and yet careful scrutiny of those bones has failed to reveal any evidence of it. Most of the great European collections of human skeletons of pre-Columbian times have been carefully examined with this point in view, without the finding of a single syphilitic bone, and no less an authority than Virchow, one of the world's greatest anthropologists and probably its greatest pathologist, has declared that no pre-Columbian bone has been produced presenting evidence of syphilis. On the other hand, human skeletons of later date showing syphilitic changes have been found in all parts of the world.

AMERICAN PREHISTORIC BONES

On the other side it must be said that we have no unquestionable evidence of syphilis in pre-Columbian bones in America. Syphilitic bones have been found in North and South and Central America, and the presumption is strong that some of these bones are of pre-Columbian origin. Nevertheless, the difficulty in establishing the antiquity of Indian remains is so great that the pre-Columbian origin of these bones cannot be demonstrated.

SPANISH DOCUMENTARY EVIDENCE

But quite apart from this circumstantial evidence of the American origin of syphilis, there has been discovered in recent times definite documentary evidence indicating the introduction of syphilis into Spain by the sailors of Columbus' first voyage. For the unearthing of this evidence we are indebted to Montejo y Robledo, a Spanish army surgeon, who critically examined all the early Spanish sources and reported his findings at the fourth Congreso internacional de Americanistas, at Madrid in 1882. The importance of Montejo's work was overlooked until attention was called to it by Seler in 1895.

Ruy Dias de Isla.—The most important evidence produced by Montejo—and surprisingly definite evidence it is—is the account of syphilis of Ruy Dias de Isla. To paraphrase Bloch: at the time of the first appearance of syphilis in Europe, Dias de Isla was a physician of note, who for ten years held the position of surgeon at the Hospital of All Saints in Lisbon. There he had a large experience in syphilis, which he incorporated in a special work which was published between 1510 and 1520, and was fortunately discovered by Montejo in the National Library of Madrid. Dias de Isla is known to have been in practice in 1493 in Barcelona, and he was thus in a position to be a witness to the very landing of syphilis in Europe. The title of Dias' book put into English is: "Treatise, entitled, Fruit of All Saints against the Disease of the Island Española, by Master Rodrigo de Isla, Surgeon and Citizen of Lisbon, to the Common and General Good of those Suffering from the Disease in Question, Commonly Called Bubas." The contents of the book are, briefly, as follows: Syphilis was unknown before the year 1493. It was brought by the crew of Columbus on his first voyage from Española, or Haiti. Dias called it the disease of the Island of Española, but also gave a number of native names for the disease. A majority of Columbus' crew returned to Spain infected with syphilis, and Dias himself treated several syphilitic sailors from this squadron, among them the pilot, Pinzon of Palos.

Oviedo, Las Casas, and the Spanish Chroniclers.—This record of Dias de Isla is corroborated by other contemporary Spanish chroniclers; particularly by the important works of Oviedo, and of the great Las Casas, both of whom were in America within a few years after its discovery. Oviedo was in Barcelona

at the return of Columbus in 1493, and knew Columbus and members of his crew. In his "Historia general y natural de las Indias," and in a report drawn up at the command of Charles V of Spain, he recites: That the disease was contracted from Indian women by the Spaniards with Columbus; that it was brought by them to Spain and thus transmitted to the army of Charles VIII by Spanish soldiers; and that syphilis should be called the West Indian disease, rather than the French or Neapolitan disease. He also mentions in independent corroboration of Dias de Isla, that one of the brothers, Pinzon, contracted the disease, and that it "is common among the Indians, but in those regions is not so dangerous as with us."

Oviedo was an advocate for Spain, and it has been urged that the theory of the Indian origin of syphilis may have been readily adopted by him in his attempts to palliate the cruelty of the Spaniards toward the Indians. No such charge, however, will stand against Las Casas, whose efforts were all in behalf of the Indians, but who, nevertheless, did not hesitate to give in detail the facts of syphilis among them.

The father of Las Casas accompanied Columbus on his second voyage, and Las Casas himself was in Haiti in 1498, where he lived many years and wrote his "Historia general de las Indias." He records: "There were, and still are, two things which at the beginning were very dangerous to the Spaniards. One is the disease syphilis, which in Italy is known as the French evil. . . ."

"It is, however, known for certain that it came from this island, either when, with the return of the Admiral Don Christóbal Cólon with the news of the discovery of the West Indies, the first Indians arrived, whom I saw myself in Seville, or it may be that certain Spaniards were already tainted with this disease at the time of their first return to Castile. . . ."

"I took the trouble on several occasions to interrogate the Indians of this island as to whether this disease was of great antiquity, and they answered, 'Yes.'" . . .

"It is also an undoubted fact that all Spaniards addicted to sexual excess, who did not in this island observe the virtue of continence, were attacked by the disease, not one in a hundred escaping, unless the woman was healthy." He too emphasizes the greater severity of the disease among the Spaniards than among the natives.

In addition to Oviedo and Las Casas, numerous others of the early chroniclers of Spanish America (Pane, Sahagun, Hernandez), testify as shown by the researches of Montejo, to the pre-Columbian existence of syphilis in America. They show not only that the disease was known to the Indians, but that the Indians had numerous names for it; that they were fairly familiar with its symptoms and course, and had well-worked-out methods of treatment for it; and that the disease was much milder in its course among the Indians than among the Spaniards, who contracted it from them.

This brief summary of the discoveries of Montejo y Robledo from his researches among original Spanish authorities, furnishes the final link connecting the origin of syphilis with America, and, it would seem, compels us to conclude that syphilis was introduced into Europe from Haiti by the sailors of Columbus on their return in 1493 from his first voyage to America.

THE LANDAU IODIN SERUM TEST FOR SYPHILIS *

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A good deal of interest has been aroused lately in the new serum test for syphilis proposed by Landau.[1] It is declared that this test is more sensitive than the Wassermann reaction and that its simplicity makes it available for every one. Among the many tests said to have these qualities, the Landau demands attention because of the popular interest shown in it and the possibility that it may come into more or less general use. Any new test for deciding so important a diagnosis as that of syphilis must be subjected to the sharpest scrutiny, and tried in many thousand cases.

Landau at first used as a reagent a 0.05 per cent. solution of iodin in liquid petrolatum. The composition of various samples of this solvent varied enough, however, to make it difficult to obtain a reliable reagent, so that he later adopted carbon tetrachlorid (CCl_4) as a solvent. In this he dissolves 1 per cent. of iodin (a saturated solution which requires trituration to complete it), and uses 0.1 c.c. of this reagent to 0.2 c.c. of the serum to be tested. These are shaken together in a test tube 12 mm. in diameter, and allowed to stand at room temperature for four hours. If, at the end of this time, the serum above the decolorized reagent is a clear yellow, the reaction is recorded as positive. If the serum is an opaque grayish-white, it is recorded as negative. Only fresh serum, obtained not more than six hours before, and free from any cloudiness or hemoglobin stain, can be used. If the result is not easy to determine, 0.2 c.c. of ammonia solution may be added to clear up the doubt.

Landau, with his first technic, reported that he obtained, in a series of 122 cases, only one result that did not agree with the clinical diagnosis. This was a positive test in a case of a leg ulcer, clinically and serologically nonsyphilitic. He reported also that the reaction gave fifty-five positive readings in a series of ninety syphilitics, in whom only forty-nine positive Wassermann reactions were obtained.

These results have not been substantiated by others. Golay,[2] using the carbon tetrachlorid reagent, obtained forty-one positive, eleven doubtful, and eleven negative reactions in a series of sixty-three syphilitics, in which only thirty-seven positive Wassermann reactions were obtained. But he also reports in seventeen nonsyphilitics, all of whom had negative Wassermann reactions, a positive Landau test in eight cases. One of these was a case of gonorrhea, three cases of soft ulcer, two of tuberculosis and two of malignant tumor: 47 per cent. positive in nonsyphilitics! He concludes that the test is positive in a large percentage of cases of systemic disease, but reports negative reactions in all of three cases of "skin disease of external origin" and three healthy persons.

Villaret and Pierret[3] report agreement with the Wassermann reaction in thirty-two cases of thirty-nine

* From the Dermatological Department of Cook County Hospital.

1. Landau, Wilhelm: Untersuchungen über eine Reaktion luetischer Sera mit einem Jodöl-Reagens, Wien. klin. Wchnschr., 1913, xxvi, 1702.
2. Golay, J.: La réaction de Landau, Rev. méd. de la Suisse romande, 1914, xxxiv, 571.
3. Villaret and Pierret, R.: Tr. Soc. biol. de Paris, Presse méd., July 29, 1914, p. 582.

examined, and agreement with the clinical diagnosis in twenty-seven of thirty-three cases.

Capello[4] reports that in forty-one cases, the Landau reaction agreed with the Wassermann in only twenty-seven, leaving fourteen, or 34 per cent., in which it differed. In three cases of late syphilis under mercury treatment, the Wassermann reaction was negative, while the Landau gave a strong positive in two and a doubtful positive in one. In two cases clinically and serologically nonsyphilitic, the Landau test gave a strong positive. Of four cases in which the Wassermann reaction was a strong positive, the Landau gave a doubtful result in one and a frank negative in three.

My technic is the same as that prescribed, except that for the first of my series I used very small test tubes, in order to make the small column of serum longer and more easily seen. Later I adopted the regulation size, 12 mm. diameter, running a series of parallel reactions in both kinds of tubes, until I was satisfied that my results were practically the same with both, and that my early tests could be admitted as reliable. I also used from the beginning twice the prescribed quantities of serum and reagent, 0.4 c.c. of serum and 0.2 c.c. of reagent. But in order to check this with the original technic, and to check my results on each serum, I made each time two tests, one with the original quantities and a parallel test with the double quantities. The measurement of the reagent is a difficult matter in the ordinary pipets. My work was made much easier by the use of a Wright pipet, graduated in 0.1 c.c. In this, several doses of reagent can be taken up, separated by columns of air, and the movement of the thin liquid much more easily controlled.

On shaking the mixture of serum and reagent, an emulsion is formed which soon becomes a light yellow and then white. All serums decolorize the carbon tetrachlorid, so that it separates out and remains as a white layer under the serum.

The reading of the final result is by no means always easy. All degrees of opalescence occur, and even the addition of ammonia does not always clear up the doubt. Golay makes the same observation, and this accounts for the large number of doubtful reactions recorded by him and Capello. I have tried to avoid as far as possible recording doubtful reactions, and I believe that my use of two tests for each serum has been helpful in that direction. Where any doubt existed, I have tried to give the new test the benefit of it.

My results with fifty tests in forty-six cases of syphilis are shown in the accompanying table.

COMPARATIVE RESULTS WITH THE LANDAU AND WASSERMANN REACTIONS

	No. Cases	Landau Reaction			Wassermann Reaction	
		+	+—	—	+	—
Primary syphilis	5	4		1	5	
Active secondary	26	7		9	16	
Latent	11	1	1	9	5	6
Tertiary	17	13		4	13	4
Tabes	1			1	1	
Totals	50	25	1	24	40	10

One latent case under treatment gave a positive Landau and a negative Wassermann. This is greatly outweighed by the five latent cases which gave negative Landau reactions and positive Wassermanns. In the tertiary cases the honors are even. Nine cases gave positive reactions with both tests. Four gave positive Landau reactions and negative Wassermanns. Two of these were on the same patient. Four gave negative Landau reactions and positive Wassermanns.

Of forty tests in nonsyphilitics, all of whom had negative Wassermanns, twenty-nine gave negative Landaus, eleven positives. In these eleven cases, no history of syphilis could be obtained, although one, an old hemiplegic, may be suspected because of a history of cerebral hemorrhage at the age of 21. The positive Landau tests in this series were as follows:

One case of ulcer of the cheek from caustic applied by a dentist.
One of five cases of ulcus molle.
Two of five cases of gonorrhea.
One case of gonorrheal epididymitis.
One case of salpingitis and abortion.
One case of pulmonary tuberculosis with lupus of the palate.
One case of hemiplegia with ulcer of the leg.
One case of seborrheic dermatitis.
Two cases of dermatitis venenata, both from rhus toxicodendron.

My results differ from those of the other investigators of this subject in the low percentage of positive results in known syphilitics, 52 per cent. of positives in the forty-six cases, while the Wassermann reaction gave 84.8 per cent. of positives. It might be thought, from the large percentage of positives in tertiary cases, that the administration of iodids had something to do with the production of a positive Landau test. But all our secondary cases received iodids, and the Landau was especially weak in them, differing markedly from all the European writers on the subject, and agreeing most nearly with Kolmer,[5] who reports 71.6 per cent. of positive Landau reactions in Wassermann-positive serums. Mine gave 62.5 per cent. of positive Landaus in Wassermann-positive serums. Kolmer obtained 70 per cent. of positive tests in Wassermann-negative serums, which may be due to the fact that he used only 0.01 c.c. of the reagent, instead of 0.1 c.c., or with the fivefold amounts, 0.05 c.c. of reagent to 1.0 c.c. of serum. If the test depended on the same constituent of the serum that binds complement in the Wassermann test, it might be expected to give with a smaller amount of reagent a larger proportion of positives in syphilitics at the same time that a number of positives in nonsyphilitics would appear. But the corresponding increased percentage of positives in syphilis does not appear in Kolmer's series.

Leaving out the case of old hemiplegia as a suspect syphilis, my series of nonsyphilitics gave 27.8 per cent. of positive reactions. Golay, in seventeen nonsyphilitics, obtained 47 per cent. positive Landau reactions. Capello, in forty-one cases of both classes, obtained a positive Landau reaction in two which are probably nonsyphilitic, one a subacute polyarthritis and the other listed as clinically nonsyphilitic, both giving negative Wassermanns. A test giving so large a percentage of positive results in nonsyphilitic cases can certainly be of no value in the diagnosis of syphilis, and the idea that it is a test for syphilis can do incalculable harm.

The hope with which I undertook this work, that a negative Landau test might prove of value in eliminating syphilis from the diagnostic possibilities of a case, has been destroyed by the failure of the test to equal

4. Capello, G.: Contributo allo studio della reazione di Landau nella sifilide, Gazz. d. osp., 1915, xxxvi, 423.

5. Kolmer, J. A.: Concerning Landau's Color Test for Serodiagnosis of Syphilis, THE JOURNAL A. M. A., May 1, 1915, p. 1461.

the Wassermann reaction in my series of known syphilitics. My statistics do not bear out the idea of Golay and Capello, who think that under treatment the test remains positive longer than the Wassermann reaction.

The Landau reaction is, as Golay says, an interesting phenomenon, which may some day be made use of in research. As a means of diagnosis, however, it deserves no consideration, but should be relegated to the same shelf as its predecessor and possible relative, the iodin reaction of the leukocytic granules.

SUMMARY

1. No reliance can be placed on a positive Landau, for it occurs in a large percentage of nonsyphilitics.

2. A negative Landau is of no value in proving the absence of syphilis, for a large proportion of syphilitics have negative Landaus.

3. So far as this series of cases can show, no definite relation exists between syphilis and the Landau serum reaction.

A FURTHER NOTE ON LANDAU'S COLOR TEST FOR SERODIAGNOSIS OF SYPHILIS *

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Shortly after the publication of my paper concerning Landau's color test for the serodiagnosis of syphilis[1] I learned that 0.1 c.c. instead of 0.01 c.c. of the 1 per cent. iodin in carbon tetrachlorid reagent should have been used with 0.2 c.c. of serum. THE JOURNAL,[2] from which I obtained this technic, had quoted from an Italian medical journal[3] which was responsible for the error. Additional foreign literature[4] states that the correct quantity of the iodin reagent is 0.1 c.c. and since my work had been done with 0.01 c.c. reagent or ten times less the amount given by Landau I have continued the work with this correction, the results being summarized in this paper.

A 1 per cent. solution of iodin was prepared according to weight by dissolving 1 gram of iodin crystals in 62.7 c.c. pure carbon tetrachlorid (specific gravity 1.59 at laboratory temperature) and the container was tightly stoppered to prevent evaporation. The regular and routine test was conducted by placing 0.2 c.c. of serum in a small test tube, adding 0.1 c.c. of the reagent and gently shaking until all color had been removed from the reagent.

The reagent has a deep purple blue color and owing to its high specific gravity settles in the test tube below the serum. After thorough agitation the mixture assumes a brownish color and the carbon tetrachlorid quickly settles to the bottom of the tube in a layer resembling chloroform.

Each serum was also tested routinely with five times the quantity of serum and reagent, namely, 1 c.c. of serum and 0.5 c.c. of reagent. This mixture results in the formation of a heavy brownish sediment overlaid with serum.

Immediately after serum and reagent are mixed the whole is distinctly cloudy; after standing for four hours at room temperature a syphilitic serum, according to Landau, becomes clear transparent yellow, whereas with a nonsyphilitic serum the fluid becomes a whitish gray and is opaque.

When 1 c.c. of serum and 0.5 c.c. of reagent are used the readings cannot usually be made at the end of four hours because of insufficient time for clearing. With this technic the mixtures must be centrifuged or the readings delayed for twenty-four hours.

I have experienced considerable difficulty in reading the reactions. With those reactions in which the supernatant serum is perfectly clear or quite cloudy no difficulties arise in recording the result, but in many instances the serum is neither clear nor distinctly cloudy, but is faintly opalescent, so that different observers will vary considerably in reading the same reactions. For this reason a portion of the unused serum should be on hand for comparison; but under any conditions the reading and interpretation of the tests are difficult and unsatisfactory.

I have again tested each serum with Landau's original reagent of iodized petrolatum, prepared by the addition of 5 drops of 10 per cent. tincture of iodin to each 10 c.c. of white paraffin oil, followed by thorough mixing. As the color of this mixture tends to fade spontaneously I have prepared fresh mixtures twice a week. The test with this reagent was conducted by placing 0.2 c.c. serum in a small test tube and adding 2.5 c.c. of the reagent followed by thorough mixing and standing aside at room temperature for from fifteen to twenty-four hours. A control without serum was included with each set of tests.

Immediately after mixing the serum and reagent the mixture is of a light pinkish color; the serum, however, quickly settles to the bottom of the tube and is of a deeper yellow color, while the deep pink tint returns to the supernatant oil. I have usually shaken the tubes once or twice more during the following six hours.

According to Landau a syphilitic serum decolorizes the mixture after fifteen hours, while the color persists a reddish yellow with normal and nonsyphilitic serum.

MATERIALS AND METHOD OF STUDY

In all 172 serums and fourteen cerebrospinal fluids[5] have been tested. The majority of these were collected within twenty-four to forty-eight hours of the time when these tests were made and were centrifuged if necessary to render them clear and free of corpuscles. Markedly opalescent serums as those collected soon after a meal were discarded; the majority were clear while a few were faintly tinged with hemoglobin. The latter were more likely to become cloudy and opaque with the iodin reagent than were perfectly clear serums.

I found no differences, however, in the results of the tests, whether a serum was secured within three hours or three days of the time when the tests were made, and likewise practically the same results were observed with fresh active serums and the same serums after heating at 55 C. (131 F.) for thirty minutes (inactivation). The plan of study was the following:

TECHNIC

(a) Two-tenths c.c. fresh active serum + 0.1 c.c. iodin tetrachlorid of carbon reagent; the results were

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* From the Laboratories of the Philadelphia Polyclinic and College for Graduates in Medicine.

1. Kolmer, J. A.: Concerning Landau's Color Test for Serodiagnosis of Syphilis, THE JOURNAL A. M. A., May 1, 1915, p. 1461.

2. Color Test for Syphilis, Misc. Abstr., THE JOURNAL A. M. A., Oct. 10, 1914, p. 1317.

3. Un nuovo metodo diagnostico della sifilide, abstr., Riv. Osp., July 15, 1914, p. 641.

4. Réaction des sérums syphilitiques avec le réactif de W. Landau, abstr., Presse méd., May 2, 1914, p. 335.

5. I am indebted to Miss A. McNitt of the laboratory of the Philadelphia General Hospital for a number of these serums.

read after standing four hours and again after twenty-four hours at room temperature.

(b) The same technic was repeated after the serum had been heated at 55 C. for half an hour (inactivation).

(c) One c.c. fresh active serum + 0.5 c.c. iodin reagent; the results were usually read after standing twenty-four hours at room temperature.

(d) The same technic was repeated after the serum had been heated at 55 C. for half an hour.

(e) Two-tenths c.c. fresh active serum + 2.5 c.c. iodized petrolatum; the results were read after from fifteen to twenty-four hours at room temperature.

(f) Same technic repeated after the serum had been heated at 55 C. for half an hour.

(g) A Wassermann reaction was conducted with each serum after inactivation, with three different antigens, namely, an alcoholic extract of human heart reenforced with cholesterin; an alcoholic extract of syphilitic liver and an extract of acetone-insoluble lipoids. All serums reacting positively with the three antigens were included and listed as Wassermann positive; those reacting negatively with all extracts were listed as Wassermann negative. In view of the frequent difficulty of establishing a reliable clinical diagnosis of syphilis I have adhered to my former plan of studying the Landau test from the standpoint of Wassermann positive and Wassermann negative serums.

RESULTS

(*a*) *With the Iodized Petrolatum Reagents.*—As stated in my previous paper, the addition of serum to this reagent in the proportions named results in the partial decolorization of the reagent after from fifteen to twenty-four hours in the majority of tests, regardless of whether the serum was from a syphilitic or non-syphilitic person. Of 92 serums (52 Wassermann positive and 40 Wassermann negative) tested with this reagent, partial loss of color occurred in 75, or 81 per cent., with no distinction between Wassermann positive and negative serums; in 11 serums, or 12 per cent., there was complete or almost complete decolorization, and in 6, or 6 per cent., no change of color.

Cerebrospinal fluids, on the other hand, produced slight or no change in the color of the mixture, regardless of whether they were Wassermann positive or negative.

(*b*) *With Iodin Tetrachlorid of Carbon Reagent.*—The results observed with this reagent are summarized as follows:

1. Of 64 serums yielding *positive Wassermann reactions* and tested in a fresh active condition in amounts of 0.2 c.c. serum with 0.1 c.c. of reagent, 48, or 75 per cent., reacted positively as read at the end of four hours; at the end of twenty-four hours four serums became cloudy and thereby reduced the percentage of positive iodin reactions to about 69 per cent. These results tallied quite closely with those previously reported when 0.01 c.c. of the reagent had been used.

2. Of 84 serums reacting *negatively in the Wassermann reaction* and tested in a fresh active condition in amounts of 0.2 c.c. of serum with 0.1 c.c. of reagent, but 36, or 42.7 per cent., reacted negatively as read at the end of four hours. In my previous work, including 61 Wassermann-negative serums tested with 0.01 c.c. reagent, but 29.5 per cent. reacted negatively, so that with the larger amounts of reagent the percentage of false positive iodin reactions has been reduced about 13 per cent.

3. The important objection I raised, however, against the iodin test as a practical diagnostic procedure in that it yields a high percentage of falsely positive reactions, is confirmed in this second series of cases.

4. With 1 c.c. of serum and 0.5 c.c. of reagent the results as read at the end of twenty-four hours tallied quite closely with those observed when 0.2 c.c. of serum and 0.1 c.c. of reagent were used. With the larger amounts the reactions usually cannot be read at the end of four hours.

I have worked with other combinations of positive and negative serums and reagents and found 0.4 c.c. of serum with 0.2 c.c. of reagent quite satisfactory in that the quantities are larger and accordingly more easily read than those given by Landau, and the readings may be made after four hours, but the results were almost identical with those observed with the smaller amounts and I have not yet found a combination of serum and reagent that would yield more satisfactory results in the diagnosis of syphilis.

5. While Landau states that only fresh active serums should be used, I have tested serums at different times varying from a few hours to three days after bleeding and found practically no differences in the results. Likewise all serums were tested after heating at 55 C. for half an hour and the results were similar to those observed with active serum. With 82 per cent. of serums the results were identical, while 18 per cent. of serums reacting positively in an active condition were negative when tested after the process of heating or inactivation.

6. With cerebrospinal fluids the results were entirely unsatisfactory, as previously reported. Practically all fluids reacted alike, that is, the color persisted in the reagent collected in the bottoms of the test tubes and the supernatant fluids remained clear irrespective of whether they were Wassermann positive or negative. Of fourteen fluids tested, eight gave strongly positive Wassermann reactions and five reacted negatively, but as stated, all reacted in a similar manner when tested with iodin in carbon tetrachlorid and iodin in paraffin oil reagents.

7. The starch test for unbound iodin was applied by adding 0.5 c.c. of a 1 per cent. solution in distilled water. After a few minutes a blue color at the line of contact between serum and reagent is seen in the majority of tests, while in a few the reaction is quite marked or entirely absent. This test was applied to most serums after the four-hour interval and to the balance after the twenty-four-hour interval, at room temperature.

As an aid in differentiating positive from negative iodin reactions this starch test had failed to be of any value. Of 67 serums remaining clear or giving positive Landau reaction at the end of four hours, 48, or 71 per cent., gave a positive starch reaction, while of 33 serums giving a negative Landau reaction, 31, or 94 per cent., gave a positive starch reaction.

When 0.01 c.c. of iodin reagent is used with 0.2 c.c. serum as in my previous work the starch test is negative in the majority of instances, as in the series of 58 tests so conducted a faint starch reaction was apparent in but six, and four of these occurred in clear serums or positive reactions, according to Landau.

SUMMARY

To sum up, the iodin color test as conducted with the correct technic was found to have no practical value in the serodiagnosis of syphilis because of its irregular results as shown by the low percentage of correct positive reactions with Wassermann positive serums, and more especially by reason of the high percentage of false positive reactions with Wassermann negative serums.

THE ETIOLOGY AND EXPERIMENTAL PRODUCTION OF HERPES ZOSTER

PRELIMINARY NOTE *

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Head and Campbell[1] have shown that the peripheral manifestations in herpes zoster are due to lesions in the corresponding posterior root ganglia. The character of the lesions in the ganglia described by them and others and the symptoms suggest strongly a microbic origin of this disease. And recently Sunde[2] has demonstrated gram-staining diplococci in a hemorrhagic gasserian ganglion in a case of ophthalmic herpes in an old man who died of a bronchopneumonia three and one-half days after the appearance of the herpes. The evidence, therefore, that bacteria are the cause of the lesions in the ganglia is rather direct, but so far herpes has not been produced experimentally in animals by intravenous injection.

Rosenow[3] has demonstrated that streptococci from the appendixes in appendicitis, from the walls of the gallbladder and the center of gallstones in cholecystitis, from the depths of ulcers of the stomach and duodenum, from the articular exudate in rheumatic arthritis, and the organisms from the subcutaneous nodes in erythema nodosum tend to localize electively in the tissues from which they are isolated. He has also shown that the probable infection atria (tonsils, pyorrheal pockets, suppurating sinuses, etc.) in these diseases harbor streptococci and other organisms showing similar elective localization when injected intravenously into rabbits.

It occurred to us that the presumable infection atrium in cases of herpes zoster might contain streptococci or other bacteria having elective affinity for the posterior root ganglia, and experiments were made accordingly.

Herpes of the skin, tongue or lips and lesions in the corresponding ganglia have been produced in a large number of rabbits and other animals (forty-six) by intravenous injection of the bacteria in emulsions of extirpated tonsils, of mixed cultures and pure cultures of streptococci obtained from tonsils or pyorrheal pockets, and of streptococci in pure culture from the spinal fluid. A number of animals, usually those showing marked herpes of the skin, showed also herpetiform lesions of the viscera, and in these the ganglia of the vagus or sympathetic nerves were found to be hemorrhagic. The tendency of these organisms to localize electively in the ganglia is illustrated by the fact that herpes developed in six guinea-pigs following intraperitoneal injection. The streptococci isolated from the tonsils and other places after recovery, those cultivated on artificial mediums for a time, and those passed through a series of animals no longer show this peculiar property. Broth culture filtrates, proved not to contain streptococci, failed to produce the lesions.

The lesions of the ganglia consist chiefly of hemorrhages and round-cell infiltration, usually most marked just beneath and outside the capsule and surrounding areolar tissue and along the sheath of the corresponding nerve. The blood vessels commonly show marked congestion, and at times are completely or partially filled with mononuclear and polynuclear leukocytes. Gram-staining diplococci and short chains have been found to occur quite constantly in the areas showing lesions in and about the ganglia, but not in the normal portions. Cocci have been found in these lesions, by cultures and sections, when absent in the blood and other tissues. The peripheral lesions in the experimental disease in the animals which recovered, just as in man, have not contained the organisms. Most of the eleven cases studied were typical thoracic herpes zoster, three were cases of recurring herpes, one a marked herpes of the lips and left side of the cheek during pneumonia, and one a mild herpes during an attack of an ordinary cold.

The following experiments will serve to illustrate the results obtained:

Experiment 1.—D. 220, a small white and black dog, was injected intravenously, February 20, with the growth from 45 c.c. of ascites-dextrose-tissue broth of a pure culture of a rather long-chained green-producing streptococcus from the tonsils removed on the second day after the onset of a typical attack of herpes zoster.

February 21: Seems ill and keeps rubbing the left side of head with front paw.

February 22: Seems better, but still rubs gently and slowly left side of head.

February 23: Seems about the same as yesterday. Chloroformed and examined at once. The under surface of the skin of left side of forehead shows a number of hemorrhagic vesicles from which exudes a large amount of serosanguineous fluid when cut across. A few similar lesions are found in the subcutaneous fat over lumbar region on the right side corresponding to the last dorsal vertebra. Under the vesicle on left side of head the periosteum is hemorrhagic over an area 0.5 by 1 cm. The left gasserian ganglion shows a small hemorrhagic area. The spinal cord was not removed. The spinal fluid is turbid and contains a moderate number of large and small mononuclear cells. No other gross lesions.

February 24: Cultures in ascites-dextrose broth from spinal fluid and hemorrhagic ganglion give pure cultures of short-chained streptococcus, while those from the blood and joint are sterile.

Experiment 2.—D. 242, a small white dog, was injected intravenously, March 4, with the growth from 40 c.c. of ascites-dextrose-tissue broth of the primary, pure culture of the spinal fluid in a case of typical herpes zoster.

March 6: Seems well. Chloroformed. Marked herpes of inner angle of right eye and of the upper lip. Rather large amount of turbid spinal fluid. Marked hemorrhage of right gasserian ganglion; the left appears normal. No other lesions.

March 8: Cultures from spinal fluid and hemorrhagic ganglion show moderate number of grayish-green colonies of streptococcus only on blood agar plates. The blood, joint fluid and opposite ganglion are sterile.

* From The Memorial Institute for Infectious Diseases.

1. Head and Campbell: Brain, 1900, xxiii, 351.
2. Sunde: Deutsch. med. Wchnschr., 1913, xxxix, 849.
3. Rosenow, E. C.: Jour. Infect. Dis., 1915, xvi, 240; The Newer Bacteriology of Various Infections as Determined by Special Methods, The Journal A. M. A., Sept. 12, 1914, p. 903; Bacteriology of Cholecystitis and Its Production by Injection of Streptococci, Nov. 21, 1914, p. 1835.

CHOLESTERINEMIA AND THE WASSERMANN REACTION *

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Cholesterin has most important biologic applications: cholesterin and the lipoids are seriously involved in the specific blood tests, and it has been said that "no earnest discussion of serologic work can be undertaken today without reference to them." [1] It is probable that no earnest serologic work today can be properly explained or correctly interpreted without due regard to the cholesterin and lipoid content of the blood. It is the question of the correct interpretation of the Wassermann reaction which first interested me in this work.

Recent work on the Wassermann reaction has tended, first, toward the standardization of this very important clinical test: second, toward the increase in its delicacy, and third, toward the production of a suitable antigen. A review of the literature of the past year or more will show, at a glance, that it is cholesterin with which most, if not all investigators are working. Some of the more recent subjects are entitled as follows:

1. "Cholesterine Reaction in Serodiagnosis of Lues." [2]
2. "Use of Cholesterinized Antigens in The Wassermann Reaction." [3]
3. "Cholesterinized Antigens." [4]
4. "The Use of Cholesterine Antigen in the Wassermann Reaction." [5]
5. "A Method Developed for Obtaining a Standard Wassermann Antigen." [6]
6. "Serum Cholesterol and The Wassermann Reaction." [7]
7. "A Comparison of Cholesterinized and Non-Cholesterinized Artificial Antigens in The Wassermann Reaction." [8]
8. "Modified Technique For Wassermann Reaction." [9]
9. "Antigens in Wassermann Reaction." [10]
10. "Cholesterine-Heart Antigen Proposed by Walker and Swift." [11]

Other papers have undoubtedly been written on the subject, but the ten mentioned clearly show that cholesterin is receiving considerable attention in our newer researches on the Wassermann reaction. A great number of serologists, however, especially as concerns the Wassermann reaction, have failed to take into consideration those apparently uninteresting and unimportant clinical manifestations which, in the great majority of instances, accompany cases of syphilis. We practically never see a case of syphilis which does not at the same time manifest some other clinical abnormality not always dependent on syphilis. I refer to such clinical abnormalities as fever, nephritis, arteriosclerosis, jaundice, etc.

I am not in a position to discuss the various methods which we now see employed in doing the Wassermann test; but if we are to go ahead studying the influence which cholesterin plays in the Wassermann reaction (and by the Wassermann reaction I mean the biologic reaction of that name), must we not take into consideration the pathologic variations in the cholesterin content of the blood? Up to the present time considerable work has been done to determine in which pathologic conditions the cholesterin content of the blood varies, [12] and we have sufficient data safely to say when we can expect either a hypercholesterinemia or a hypocholesterinemia. [13] That all this newer work on the Wassermann reaction should have gone on without considering the cholesterin content of the blood in individual cases is surprising.

We have arbitrarily designated the intensity of the Wassermann reaction numerically: 1 +, 2 +, 3 + and 4 +, depending on the degree of hemolytic inhibition. Why should one case of syphilis show a 1 + reaction and another case a 4 + reaction? Duration of the disease and severity of infection, or effect of treatment, do not always explain the differences in the intensity of the reaction. Is a man with a 1 + reaction less syphilitic than one with a 4 + reaction? Are such experiences as the following unheard of?

1. A case infected thirty years ago with a 4 + and never treated.
2. A case infected twenty years ago with intermittent treatment during this period, with a 4 +.
3. A case of one year's duration, with moderately severe treatment with a 4 +.
4. A case of 4 + vigorously treated, and after two years the reaction is still 4 +.
5. A case in which the reaction increases in spite of proper treatment.
6. A case in which the reaction decreases without treatment.

What do these discrepancies mean? Do they mean anything? Is there something in the blood, something whose quantity varies, responsible? Is it unreasonable to assume that a case is or is not syphilitic, and that the intensity of the Wassermann reaction is determined not by how much syphilis is in the individual's system but by how much cholesterin, or lipoids, which are seriously involved in the reaction, are in that individual's blood serum? The reverse argument that syphilis affects the lipoid and cholesterin content of the blood does not hold. I have examined a sufficient number of serums to convince me of that fact. There is no definite relation between cholesterinemia and the present-day numerically interpreted intensity of the Wassermann reaction.

We have been led to believe that cholesterin materially influences the Wassermann reactions. But there seems to be a difference of opinion as to the value of using an antigen to which cholesterin has been added. Some of the conclusions of investigators in this field are as follows:

1. C. C. W. JUDD:

   (*a*) "Cholesterinized antigens do not yield an appreciable number of nonspecific reactions."

* Read before the Society for Serology and Hematology, New York, April 2, 1915.

1. Reflections Regarding Cholesterol, editorial, THE JOURNAL A. M. A., Feb. 21, 1914, p. 620.
2. Matlack, F. S.: Cholesterine Reaction in Serodiagnosis of Lues, Month. Cyc. and Med. Bull., No. 7.
3. Thomas, B. A., and Ivy, R. H.: The Use of Cholesterinized Antigens in the Wassermann Reaction, THE JOURNAL A. M. A., Jan. 30, 1914, p. 363.
4. Thompson, Loyd: Cholesterinized Antigens, THE JOURNAL A. M. A., May 9, 1914, p. 1458.
5. Field, Cyrus W.: The Use of Cholesterin Antigen in the Wassermann Reaction, THE JOURNAL A. M. A., May 23, 1914, p. 1620.
6. Field, Cyrus W.: A Method Developed for Obtaining a Standard Wassermann Antigen, Arch. Int. Med., May, 1914, p. 790.
7. Weston, Paul G.: Serum Cholesterol and the Wassermann Reaction, Jour. Med. Research, xxx, No. 3, p. 377.
8. Judd, Charles C. W.: A Comparison of Cholesterinized and Non-Cholesterinized Artificial Antigens in the Wassermann Reaction, THE JOURNAL A. M. A., July 25, 1914, p. 313.
9. Orkin, G.: Modified Technique for Wassermann Reaction, Berl. klin. Wchnschr., li, No. 15, p. 667.
10. Owen, R. G., and Snure, H.: Antigens in Wassermann Reaction, Jour. Michigan Med. Soc., xiii, No. 7.
11. McClure, C. W.: Cholesterine-Heart Antigen Proposed by Walker and Swift, Jour. Med. Research, xxx, No. 3.
12. Henes, E., Jr.: The Cholesterine Content of Human Blood under Various Pathological Conditions, Deutsch. Arch. f. klin. Med., iii, Nos. 1 and 2.
13. Henes, E., Jr., Cholesterinemia, Proc. New York Path. Soc., xiii, No. 7.

(*b*) "Cholesterinized antigen, though amenable to the influence of treatment, is less susceptible to extinction by therapeutic measures."

(*c*) "Cholesterinized antigens detect many luetic cases which do not yield positive results with the Noguchi reaction."

2. B. A. THOMAS and R. H. IVY:

(*a*) "We conclude that with cholesterinized antigens, varying degrees of inhibition of hemolysis may be obtained in serums from many conditions other than syphilis, and in normal persons."

3. LOYD THOMPSON:

(*a*) "If the reagents are titrated properly, nonsyphilitics will not give positive results."

(*b*) "Cholesterinized antigen is slightly more delicate than other antigens, and is especially valuable in determining when a cure has been effected, as a positive with it persists after treatment for a longer time than with other antigens."

4. CYRUS W. FIELD:

(*a*) "Cholesterin seems to increase the velocity of the reaction."

5. I. CHANDLER WALKER:

(*a*) "Cholesterinized alcoholic extracts of human heart have a specific fixation property with syphilitic serums, and they do not give nonspecific fixation with nonsyphilitic serums, provided the reagents are properly titrated."

(*b*) "The serum of syphilitic patients contains a 'something' for which cholesterin has a definite fixation power in the presence of complement."

6. PAUL G. WESTON:

(*a*) "The cholesterol content of the serums examined bore no constant relation either to the Wassermann reaction or the gross appearance of the serum."

I am not in a position to criticize these conclusions, except to say that I have had serums with astoundingly high measures of cholesterinemia in which the Wassermann reaction was negative; again, inasmuch as P. G. Weston confined his examinations to the bloods of normal individuals and those of paretics, I am inclined to doubt the justification for his conclusion.

It is apparent, nevertheless, from the review just made, that cholesterin can, and seemingly does, influence the Wassermann reaction. May I therefore ask the following questions?

1. Has the Wassermann reaction in a pregnant woman ever changed from 2 + to 4 + during the course of the pregnancy despite treatment?

2. Has the 4 + reaction of a chronic nephritic ever changed to 2 + when that patient became uremic and died even without antisyphilitic treatment?

3. Is the Wassermann reaction influenced at all by fever?

4. Why does an icteric serum frequently inhibit hemolysis?

5. Has the intensity of the reaction ever increased in a convalescent case of typhoid fever?

6. Do not old syphilitics, old with endarteritis and arteriosclerosis, resist treatment, that is, do they not persist with their strong reaction?

I cannot answer these questions; perhaps serologists can. But if we may assume for a moment that the cholesterinemia is responsible for the intensity of the reaction in individual cases, these questions can not only be answered, but I think, can be correctly answered. For in each of the hypothetical cases mentioned, changes in the cholesterin content of the blood could explain these different Wassermann results. Why should the cholesterin content of the blood be absolutely disregarded in interpreting the Wassermann reaction?

Among the many hundreds of cases in which I have made quantitative cholesterin determinations, obtaining the material almost exclusively from the medical and surgical services, and the dispensary patients of the German Hospital, I have about 225 in which the Wassermann reaction was also done.[14] Dr. A. L. Garbat, the attending serologist at the German Hospital, is responsible for the Wassermann results, having used the Citron-Wassermann method, noncholesterinized alcoholic extract of guinea-pig's heart, as an antigen.[15]

On most of the ambulatory cases of the dispensary, it was impossible to obtain full clinical data; but on all of the hospital cases, those data are complete, and especially those that are of importance as influencing the cholesterin content of the blood.

Tabulated briefly, they include the following:

Forty-six cases with 4 + reactions: cholesterin content of blood varying between 0.0007 and 0.00463 grams per cubic centimeter serum, with an average of 0.00234 grams.

Three cases with 3 to 4 + reaction; cholesterin, 0.00117 to 0.00160, average 0.00133.

Twenty-nine cases with 3 + reaction: cholesterin, 0.0007 to 0.00907, average 0.00202.

Thirty-one cases with 2 + reaction: cholesterin, 0.00074 to 0.00463, average 0.00238.

Nineteen cases with 1 + reaction: cholesterin, 0.0004 to 0.00399, average 0.00202.

Eighteen cases with ± reaction: cholesterin, 0.00097 to 0.00262, average 0.00174.

Seventy-nine cases with negative reaction: cholesterin, 0.000501 to 0.00621, average 0.00225.

It will be noted that of these 225 cases, seventy-nine had negative and 146 positive Wassermann reactions. The cholesterinemia in the negative cases averages 0.00225, and in the positive, 0.00196. Looked at collectively, these figures probably do not mean very much; but when one looks at individual cases, the figures are far more interesting.

In Table 1 are presented a few cases with positive Wassermann reactions, their cholesterinemia, and the coincident clinical conditions, which in my opinion explain the cholesterinemias regardless of the luetic infection.

TABLE 1.—CASES WITH POSITIVE WASSERMANN REACTIONS, THEIR CHOLESTERINEMIA, AND CLINICAL CONDITIONS

Case No.	Wassermann	Cholesterinemia gm. per c.c. serum	Coincident Clinical Condition
1	4 +	.00247*	Obliterating endarteritis
2	4 +	.00381	Incomplete abortion
3	4 +	.00374	Chronic nephritis
4	4 +	.00251	Angina pectoris
5	3 +	.00265	Incomplete abortion
6	1 +	.00378	Pregnancy
7	1 +	.00385	Chronic nephritis

* It is to be remembered that the average normal cholesterinemia is about 1.5 gm. per cubic centimeter of serum.

Coming, as this paper does, with a questioning finger pointed at the Wassermann reaction as today interpreted and relied on from a therapeutic point of view, the following questions arise:

If cholesterinized antigens influence the Wassermann as we have shown they do, then I ask:

Why is not the 4 + with cholesterinemia of 0.00247 a stronger reaction than the 4 + with cholesterinemia of 0.00381? Does not the difference in the blood cholesterin in these two cases have some effect on the Wassermann reaction? We call them both 4 +.

14. The total includes examinations as late as Feb. 1, 1915.

15. Citron, J. B.: Immunity, Methods of Diagnosis and Therapy and Their Practical Application, translated by A. L. Garbat, Ed. 2, Philadelphia, P. Blakiston's Son & Co., 1914.

Furthermore, in Table 2 are cited cases with equally strong Wassermann reactions, but with widely varying cholesterinemias. Explaining the cholesterinemia by the coincident clinical conditions which, unfortunately, I was unable to obtain in detail in these particular cases, I present this series (Table 2).

TABLE 2.—CASES WITH EQUALLY STRONG WASSERMANN REACTIONS, BUT WIDELY VARYING CHOLESTERINEMIAS

Case No.	Wassermann	Cholesterinemia
8	4 +	.00147
9	4 +	.00390
10	4 +	.00102
11	4 +	.00463
12	4 +	.00131
13	4 +	.00355

Why is not the 4 + of Case 8 much stronger than the 4 + of Case 9, or that of Case 10 much stronger than that of Case 11? Why, with such decided differences in the cholesterinemia, do we designate all the Wassermann reactions 4 +? Why are not the cholesterinemias of Cases 9, 11 and 13 responsible for the degree of hemolytic inhibition which we designate as 4 + and not the syphilis?

TABLE 3.—CASES OF HIGHER CHOLESTERINEMIA WITH THREE PLUS THAN WITH FOUR PLUS REACTIONS

Case No.	Wassermann	Cholesterinemia
14	4 +	.00360
15	3 +	.00360
16	4 +	.00160
17	3 +	.00233
18	4 +	.00137
19	3 +	.00408

In the series of Table 3, in which the 3 + reactions have a higher cholesterinemia than the 4 + reactions, why are not the reactions of Cases 15, 17 and 19 what they are because of the hypercholesterinemia in these cases? With marked differences in the cholesterinemia, I should think we would have more marked differences in the interpretation of the Wassermann reaction. If such calculation is permissible, a 4 + reaction is 25 per cent. stronger than a 3 +, but the cholesterinemia of Case 19 is 300 per cent. higher than that of Case 18. So why not call the reaction of Case 19 something decidedly lower than 3 +? Why not 1 +?

TABLE 4.—CASES OF HIGHER CHOLESTERINEMIA WITH FOUR PLUS THAN WITH ONE PLUS REACTIONS

Case No.	Wassermann	Cholesterinemia
20	4 +	.00307
21	1 +	.00127
22	4 +	.00390
23	1 +	.00125
24	4 +	.00300
25	1 +	.00100

In the series of Table 4, in which, vice versa, the 4 + reactions have a decidedly higher cholesterinemia than the 1 +, why are not the 1 + reactions with a normal cholesterinemia just as strong as the 4 + with a hypercholesterinemia? Biologically, there is a difference, of course; but are we correct when we make such a big clinical difference in our interpretation? Do we do ourselves justice from a therapeutic and a prognostic point of view? Let us say, for example, that Case 22 with a 4 + reaction has gallstones which account for the very high cholesterin figure of 0.00390. Aware, or not aware of the gallstones, but mindful of the hypercholesterinemia, are we not justified in believing that our 4 + patient is just as nearly cured of his syphilis as is our 1 + patient?

These cases, I think, show that there ought to be at least a reasonable doubt as to our justification in arbitrarily numbering our Wassermann reactions as we do.

Continuing on the assumption that serum cholesterin influences the Wassermann reaction just as a cholesterinized antigen does, the following hypothetical cases are far from unreasonable:

CASE 1.—A married woman with syphilis becomes pregnant and, let us say, aborts at the sixth month. Experience has shown us that during these six months the quantity of serum-cholesterin constantly increases above normal, and at the termination of pregnancy slowly returns to normal. Why, if cholesterin influences the biologic reaction which we call the Wassermann reaction, should we not take the serum-cholesterin into consideration?

CASE 2.—Again, a patient with syphilis contracts typhoid fever, and the usual course of hyperpyrexia is run; during that fever period, the serum-cholesterin is decidedly diminished, and when convalescence sets in, rises considerably above normal, and then slowly comes back to normal. If, as Pighini says, cholesterol may be the chief constituent of the Wassermann reaction, why should not fluctuations in the cholesterinemia be taken into consideration when interpreting this reaction? Bürger and Beumer assert that the outcome of the Wassermann reaction is not dependent on the presence of simply more or less of cholesterol or lecithin in the serum. My experience bears out their assertions. Hypercholesterinemia in itself, in my examinations at least, does not give a positive Wassermann reaction. I have had a few cases with exceedingly high measures of cholesterinemia with a negative reaction.

CASE 3.—A patient with syphilis, with a 2 + positive Wassermann reaction, under treatment, during the course of observation develops a cirrhosis hepatis and becomes markedly jaundiced. The Wassermann test done in this icteric serum shows a reaction stronger than 2 +. Jaundice, no matter from what cause, is accompanied by a decided increase in the serum-cholesterol above the normal. Why, under these circumstances, is not the hypercholesterinemia responsible for the increased intensity in the Wassermann reaction, and why is it not accountable for the frequent fixation of complement by icteric serums? On the other hand, if in such a hypothetical case as outlined, with jaundice present, the Wassermann should stay 2 +, would it not seem reasonable on this basis to consider that our therapy had favorably influenced the syphilis, and notwithstanding the fact that the Wassermann had stayed 2 + (as we read it today), the reaction should be interpreted as something less than 2 +?

CASE 4.—In a case which, by the way, is under treatment by a colleague of mine, there is a 2 + Wassermann. This reaction continues positive despite efficient and prolonged treatment. The man's serum happens to contain 0.00463 gm. of cholesterin per cubic centimeter. I do not know what is producing this hypercholesterinemia; perhaps it is due to arteriosclerosis. But why is not the hypercholesterinemia responsible for the fact that the Wassermann does not go below 2 +? Is not this man entitled to a lower interpretation? It might be argued that the syphilis is responsible for the sclerosis and therefore for the hypercholesterinemia. But I have many cases of arteriosclerosis with negative Wassermann reactions and marked hypercholesterinemias.

CASE 5.—Another actual case is that of a young married woman, aged 21. One year ago she had a 4 + Wassermann. Since that time she has been vigorously treated, and yet the reaction stays at 4 +. The cholesterinemia in this case is 0.00287 gm. per cubic centimeter of serum. Is not this hypercholesterinemia keeping the Wassermann at 4 +, and is not this patient entitled to a lower interpretation?

CASE 6.—Another actual case is that of a man aged 39, suffering from chronic nephritis and marked secondary anemia. The Wassermann reaction in this case is ± and the cholesterinemia 0.00183 gm. per cubic centimeter of serum. In the absence of a luetic history, we look with doubt on

this Wassermann reaction, but the biologic reaction did show some inhibition of hemolysis. Some time later, this man developed a fever of 102 F., a clinical condition which reduces the measure of cholesterinemia; it was reduced to 0.00108, almost 80 per cent., and the biologic test which we call the Wassermann reaction was negative at the second examination.

In diabetes, nephritis,[16] cholelithiasis,[17] icterus from any cause, obesity and arteriosclerosis, in which profound changes in the cholesterin content of the blood exist, are we to ignore just that blood constituent which today serologists are most interested in relative to the Wassermann reaction? It is just because of this fluctuating cholesterinemia under pathologic conditions — a fluctuation that a rather large experience has taught us is pretty constant — that I present my ideas on the subject of the Wassermann reaction. The subject of cholesterinized antigens has called forth these ideas.

SUMMARY

1. The cholesterin content of the blood varies considerably under various pathologic conditions. Placing the normal cholesterinemia at 0.00150 gm. per cubic centimeter of serum, variations between 0.0004 and 0.0102 gm. per cubic centimeter have been encountered, the latter, as far as I know, the highest figures ever recorded.

2. We are in a position to know when a hypocholesterinemia or a hypercholesterinemia can be expected.

3. The addition of cholesterin to the antigen of the Wassermann reaction increases the rapidity and intensity of hemolytic inhibition.

4. Serologists have failed to take into consideration the pathologic variations of the blood cholesterin in interpreting the Wassermann reaction.

5. Syphilis, in itself, is not primarily responsible for a hypercholesterinemia.

6. Hypercholesterinemia, in itself, does not give a positive Wassermann reaction.

CONCLUSIONS

Conclusions, from a work of this sort, must of necessity be submitted with reservation. While acknowledging my inability to prove nothing more than the facts which I have presented, I nevertheless offer the following theoretical conclusions:

The lipoid content of the blood serum determines the intensity of the biologic reaction employed in the diagnosis of syphilis. Cholesterinemia and lipoidemia have been shown to follow parallel curves.[18] We are justified in assuming then that cholesterin determines the intensity of this reaction. Having been shown that cholesterin in the antigen does intensify the Wassermann reaction, why should the cholesterin of the blood serum be utterly disregarded? Just because the cholesterinemia shows such marked fluctuations under various pathologic conditions, and such marked fluctuations in the course of certain diseases (infectious diseases, nephritis) and certain physiologic processes (pregnancy), the serum cholesterin must be taken into consideration in the interpretation of the Wassermann reaction, whether cholesterinized or noncholesterinized antigens are used.

The nearer the blood cholesterin approaches the normal, in any given case, the stronger is the Wassermann in that case. For example: A 4 + Wassermann with a normal cholesterinemia (not taking conditions of hypocholesterinemia into consideration) should be interpreted, according to our present-day standards, as the strongest reaction. A 4 + reaction with a hypercholesterinemia is a weaker reaction than a 4 + with a normal cholesterinemia. A 4 + reaction with a marked hypercholesterinemia is no stronger than a 2 + with a moderate hypercholesterinemia. A 4 + reaction in a chronic nephritic is something less than a 4 +. It is the hypercholesterinemia of an icteric serum that often interferes with the reading of a Wassermann reaction. Failures or discouragements in our antiluetic therapy, as judged by the Wassermann reaction, may be due to certain hypercholesterinemias in individual cases. Surely there ought to be some difference in the Wassermann reactions of bloods which show respectively a cholesterinemia of 0.0007 and 0.00463 gm. per cubic centimeter of serum; and yet, these two actual extremes gave a 4 + reaction — and we call them the same, and judge them in the same way.

Finally, our interpretation of a positive Wassermann reaction would be much more accurate if we, jointly, would take the cholesterinemia into consideration. That does not, of necessity, mean that a quantitative cholesterin determination should form part of the Wassermann reaction; but those clinical factors which we know influence the cholesterinemia should most certainly be recognized and considered.

829 Park Avenue.

16. Henes, E., Jr.: Prognostic Value of Cholesterinemia in Chronic Nephritis, Read before the Clinical Society of the German Hospital, Feb. 19, 1915.

17. Henes, Edwin, Jr., The Value of the Determination of the Cholesterin Content of Blood in the Diagnosis of Cholelithiasis, The Journal A. M. A., July 11, 1914, p. 146.

18. Widal, Weill and Laudat: La Lipémie des brightiques, Semaine méd., Nov. 6, 1912.

TAENIA SAGINATA

A CASE PRESENTING STRUCTURAL ABNORMALITIES AND ASSOCIATED WITH SPURIOUS PARASITISM IN AN INFANT

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Segments of tapeworm sent in to the U. S. Bureau of Animal Industry by Dr. Louis T. Cassidy of Norwich, Conn., were found on examination to be *Taenia saginata*. Among the segments was one presenting a meristic variation consisting in the unilateral duplication of the genital pore and canals in one segment with what is apparently the formation of a rudimentary genital pore alone on the side of the segment opposite the two pores which are provided with canals. The segment is enlarged, being 20 mm. long and 9.5 mm. wide, while an adjoining segment is only 15 mm. long and 7 mm. wide. The uterine branching is somewhat diffuse and irregular, and the eggs present some abnormalities of shape and structure. An examination of a number of eggs did not disclose the presence of any developed hexacanth embryos.

The tapeworm segments were passed by a Polish child said to be from 14 to 18 months old. This seems like a very young age at which to be harboring tapeworms resulting from the eating of underdone beef and, as a matter of fact, such cases are rare. They are perhaps to be attributed to the use of scraped raw beef, the treatment advocated by Weiss in cases of chronic diarrhea, but as children are fed in many households on exactly the same food as the adults,

some of these cases may result from the ingestion of very rare steak, roasts, etc.

Accompanying the tapeworm segments from the infant was a beetle larva, said to have been passed at the same time, which I identified as *Tenebroides mauritanicus*, an identification which was confirmed by Mr. A. E. Schwartz of the U. S. National Museum. This beetle is commonly found in cereals, flour, old bread, etc., and is, of course, not parasitic. It is frequently sent in to entomologists, according to Mr. Schwartz, with a history of being passed in the feces. In such cases there are two evident possibilities: That the larva is found in the feces as a result of its occurrence in the vessel used or getting into the feces in some such way after passage; or that the larva is ingested in food, such as breakfast food, old bread, etc., and passes the digestive tract dead but undigested. It is well known that various diptera, alive or dead, may pass through the alimentary tract undigested, and there appears to be no reason why the chitinous structure of a coleopterous larva should not resist digestion equally well. I have collected such larvae from the stomach of rodents, *Sciurus aberti mimus*, but of course these larvae had not been subjected to the digestive action of the entire alimentary tract. There is every likelihood that the resistant undigestible chitinous structure would be unbroken in the case of a larva eaten by a baby. It might also be noted that the presence of such a larva in the feces fits in well with the carelessness in regard to a child's diet suggested by the presence of *Taenia saginata* at so early an age.

The tapeworm most commonly found in children is *Hymenolepis nana*. *Hymenolepis diminuta* has been found in suckling infants. According to Grimm,[1] *Taenia solium* has been reported by von Pardo[2] in an infant 5 months old. *Taenia saginata* has been reported by Comby[3] from an infant 9 months old, which had been fed raw beef juice. Westhoff[4] reports *Taenia saginata* from an infant 8 months old, and notes that the child had been fed a half pound of minced beefsteak daily. Two cases have been reported in which tapeworms are recorded from children 5 days old. In one case, European, recorded by Mueller,[5] the tapeworm reported as *Taenia solium*, was said to be 1½ feet long. In the other case, reported for the Long Island Hospital, New York, by Armor,[6] gravid segments of *Taenia solium* are said to have been passed after the administration of calomel following trismus on the fourth day. No further evidence of tapeworm was seen during the child's first year. The mother of the child was found to have a tapeworm, *Taenia solium*. Reports of cases of tapeworm in five-day old infants must be regarded as apparently due to error or confusion of some sort.

Taenia saginata, showing duplication of genital pores in a segment.

1. Grimm, K.: *Taenia saginata* beim Säugling, München. med. Wchnschr., 1914, lxi, 1780.
2. Von Pardo, J. S.: Soc. Ginec. Espan. (not available).
3. Comby, J.: Ténia chez un nourrisson, Arch. d méd. d. enfants, 1911, xiv, 525.
4. Westhoff: Tapeworm in an Eight Months Old Child, abstr., Geneesk. Tijdschr. v. Nederl.-Indie, Batav., 1884, xxiv, 168.
5. Mueller: Abgang eines Bandwurmes von einem neugebornem Kinde, Med. Cor.-Bl. d. württemb. ärztl. Ver., 1837, vii, 80.
6. Armor, Samuel Glasgow: A Fully Matured *Taenia solium*, or Tapeworm, Expelled from a Child Five Days Old, New York Med. Jour., 1871, xiv, 618.

ARTIFICIAL PNEUMOTHORAX

WITH REPORT OF FIFTEEN CASES

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During the past two years we have attempted the lung compression treatment in thirty selected cases, most of which were far advanced, and in which the disease was steadily progressing. In fifteen of these we were unsuccessful on account of dense pleural adhesions; in fifteen we were more or less successful, according to the degree of lung collapse.

While it would be impossible to make any hard and fast rule in every case, in general the indications and contraindications may be summed up as follows:

INDICATIONS

The ideal case is one in which the disease is limited to the upper portion of one lung, an acute progressive condition, generally with signs of softening, but which has not responded to the usual therapeutic measures.

The treatment is indicated in cases with marked involvement of one lung, with a moderate infiltration of the opposite lung, preferably the apex; rales may or may not be present.

The treatment in cases of severe and uncontrollable hemorrhage has often given brilliant results.

Some cases of pulmonary tuberculosis, complicated by pleurisy with effusion, offer an excellent opportunity of giving pneumothorax treatment. Lung abscesses and bronchiectasis are occasionally benefited.

Complications, such as tuberculous laryngitis, may improve if the patient is doing well otherwise. In one of our cases a deep ulceration of the left ventricular band healed entirely, and the infiltration of the left false cord, which had covered the true cord for months, entirely absorbed and retracted. We had been treating this larynx with intralaryngeal application of liquor formaldehydi, but no marked improvement was noticed until the patient commenced gaining under the collapse treatment.

We would not hesitate to try the lung compression in hopeless cases complicated by tuberculous enteritis. The symptoms referable to the lungs will improve in proportion to the extent of the lung collapse. Tuberculosis of the intestines is, however, a grave complication, whether the treatment is given or not. Some writers assert that the enteric complication may improve or even be cured if the patient is doing well otherwise; our patients who developed tuberculous enteritis after the treatment was begun lost steadily, owing to the progressive intestinal involvement, although the symptoms referable to the lungs improved.

CONTRAINDICATIONS

The chief contraindications are as follows: An extensive or progressive lesion in the opposite lung to the one to be collapsed, or disseminated miliary tuberculosis would preclude the gas treatment. The treat-

ment would not be justifiable in patients even though far advanced who are doing well under the usual therapeutic measures. Generally, basal lesions in the opposite lung are contraindications and are less favorable in the collapsed lung. Endocarditis and nephritis would lessen the chances of recovery in proportion to their severity. While dense pleural adhesions could not, strictly speaking, be considered contraindications, they are nevertheless the chief cause of a large percentage of failures.

TECHNIC

The Floyd-Robinson apparatus is the one used by us. It is very simple and easy to operate. It being determined to collapse a lung in a selected case, the patient is given beforehand one-eighth grain of morphin hypodermically for the first, rarely, for the subsequent injections.

Factors Which Should Be a Guide in Selecting the Point of Puncture.—An area is chosen as far away as possible from the original site of the disease, as here there are less likely to be found pleural adhesions. The physical signs are very often misleading. We endeavor to find an area where there is good lung resonance, good breathing, no adventitious sounds, preferably in the seventh or eighth interspace, scapular line, or at any point between the anterior axillary line and the scapular line. Efforts to find a free pleural space are often a failure, and frequent attempts have to be made in different places before a free space is found. We have often failed where by percussion and auscultation we had reason to believe we would be successful, and vice versa.

Position of the Patient.—This will necessarily vary according to the point of election. The patient lies on the side, with the lung to be collapsed uppermost. A pillow is placed in the axilla of the side on which the patient is reclining. This facilitates the widening of the intercostal space.

Preparation of the Skin.—After being properly sterilized, a small area of the skin is painted with tincture of iodin and the excess removed with alcohol.

Cocainization.—An all glass syringe is used, with a platinum needle just long enough (1 inch) to pass through the parietal pleura. We have found that 2 c.c. of a 0.25 per cent. novocain solution gives excellent results. The index and middle fingers of the left hand are placed on the upper border of the rib. A large sized wheal is made in the skin between the ribs. The tissues are then carefully cocainized, waiting until the structures in advance of the needle are thoroughly cocainized before advancing the needle farther. When the parietal layer of pleura is reached, the patient often feels a slight pricking sensation, and here we use the novocain solution freely. The structures from without inward offering resistance to the needle are as follows: the skin; external intercostal fascia, very dense; middle intercostal fascia, very little resistance; internal intercostal fascia and pleura, quite dense and generally perceptible resistance; when the pleura is thickened, marked resistance. A small puncture is now made through the epidermis and the dense external intercostal fascia with a cataract knife, and we are now ready to introduce the gas needle. The needle is held in the hollow of the right hand, between the thumb and index finger, and the tip of the index finger is pressed against the chest wall in order to have the needle under perfect control. With the gas needle we can readily determine the different layers of tissue through which it is passing, and it often passes through them with an audible snap.

The needle having pierced the external and middle intercostal fascia, we are now obliged to proceed cautiously as we approach the internal intercostal fascia and the costal pleura. The rubber tubing, having been previously connected with the needle, we now pull out the obturator and refer frequently to the manometer reading. When the needle rests against the costal pleura, a very slight oscillation can be seen, but by advancing the needle very slightly, if there are no pleural adhesions, a good free space may be observed, giving a reading, say from — 4 to — 10 cm., or — 6 to — 12 cm., actual reading. The negative reading is naturally greater during inspiration than expiration. If there are slight pleural adhesions, the reading may not be more than from — 2 to — 4 cm.

A suitable space having been found, we now close the cock leading to the manometer and slowly introduce 50 c.c. of nitrogen gas, the gas being warmed by placing the middle coils of rubber tubing in a basin of hot water; then shutting off the gas, we again consult the manometer carefully, and so on until the gas needed for the individual case is given. In new cases it is far better to inject a small amount of nitrogen gas, say from 300 to 500 c.c., leaving a negative end reading, then give refills every three to five days until gradually a total collapse of the lung is obtained. This overcomes the danger and discomfort caused by displacing the heart and other organs too rapidly, and by allowing the heart time to accommodate itself to its new position. A large needle is used for the initial injection, a smaller one for the refills.

DANGERS AND SEQUELAE

The following are some of the complications that might follow the induction of artificial pneumothorax: Pleurisy with effusion may occur in as high as 50 per cent. of the cases. The cause of this is not clear; some writers believe that it is due principally to chilling of the body, others to faulty technic, and still others to the mechanical irritation of the layers of the pleura, due to the foreign body, nitrogen gas. The fluid in a large percentage of the cases is found to contain tubercle bacilli. This complication, though rarely serious, is an annoying one. The fluid persists for a long time, but generally should not be removed unless causing disturbing symptoms; the fluid may then be withdrawn and nitrogen gas introduced to take its place. Tuberculous pyopneumothorax occurs in a small percentage of these effusions, but does not necessarily give a bad prognosis under the expectant treatment. Some instances of secondary infections have been reported, in which cases the outlook, unfortunately, must be regarded as very serious.

Shock: While numerous cases of shock have been reported in literature, and the real cause is still in doubt, this can probably be avoided by careful cocainization of the tissues and by the initial injection of morphin.

Gas Embolism: If the manometer is carefully consulted, and a good free oscillation is observed before any gas is introduced, this danger may be considered remote.

Emphysema: Emphysema, superficial or deep, may be encountered, but rarely produces any serious symptoms. The subcutaneous variety is due either to too great intrapleural pressure, or to the patient coughing

during or soon after the operation, thereby forcing the nitrogen gas out of the pleural space, which becomes diffused along the subcutaneous tissue. The deep variety is undoubtedly due to excessive intrapleural pressure. Both varieties of emphysema generally pass off in from twelve hours to two or three days.

Puncture of the Lung: The puncture of the lung parenchyma, followed by slight bleeding, may occur, but generally does not cause any serious symptoms; spontaneous pneumothorax might ensue where no adhesions prevent.

Dilatation of the Heart: This is a serious complication, and is generally due to too great intrathoracic pressure. It is far better to be satisfied with allowing the end reading to remain at zero, rarely above + 4, and gradually to induce a pneumothorax and permit the heart to accommodate itself to the increased pleural pressure.

Pain more or less severe caused by breaking up of pleural adhesions may be mentioned among the complications. Generally in left-sided gas cases the apex of the heart is displaced to the right to a greater or less degree.

REPORT OF CASES

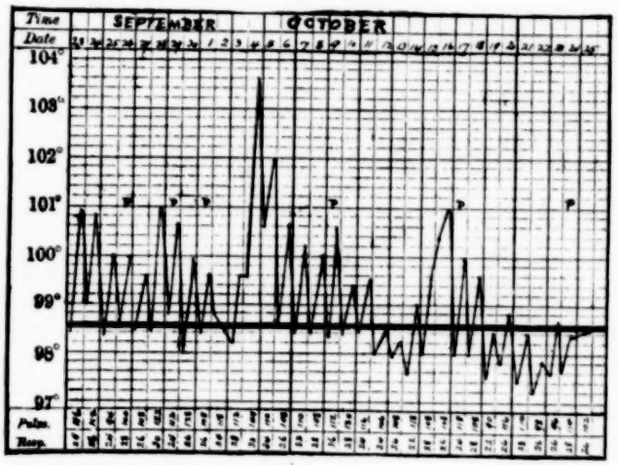
The following is a report of fifteen cases in which we were more or less successful, according to the degree of lung collapse.

CASE 1 (1198).—M. P., aged 24. Admitted Nov. 2, 1912, with marked consolidation and considerable moisture upper half left lung, slight infiltration right apex. Severe cough and profuse expectoration. Beginning Feb. 10, 1913, temperature range 101 to 102. Pneumothorax begun February 15, manometer reading —2, —5 cm., injected 325 c.c. of gas, end reading +2, —2. Refills were given at varying intervals until March 15, when treatment was discontinued on account of the resulting small space. Ten days after the first injection the temperature dropped to normal and remained practically so until April 1; temperature now ranged from 101 to 103, with signs of a large cavity developing at the top of the left lung, and patient was discharged May 10, 1913, unimproved.

CASE 2 (1324).—H. S., aged 20. Admitted Sept. 22, 1913, with marked consolidation upper half left lung, slight infiltration right apex; severe cough, profuse expectoration with bacilli present; temperature range 100 to 101.5. Gas treatment begun Oct. 17, 1913. Puncture was made in the ninth intercostal space, scapular line, manometer reading 3, —8. Injected 350 c.c. of nitrogen gas, end reading —1.5, —4. Nineteen refills were given in all, at intervals of a few days to one to two weeks, quantity of gas injected ranging from 300 to 600 c.c., and, from the physical findings, a good collapse was obtained. Four days after the treatment was begun the temperature dropped from the range of 100 to 101.5 to 99 to 100, cough improved, sputum lessened. One month after the initial injection, tuberculous enteritis developed, and while the symptoms referable to the lungs all improved, the patient lost flesh steadily and was discharged May 2 unimproved, probably because of the enteric complication.

CASE 3 (1335).—M. M., aged 18. Admitted Oct. 25, 1913, with foci through the greater part of the left lung, infiltration right apex. Moderate cough and sputum, tubercle bacilli present. February 1, temperature 100.5 in the afternoon; March 9, pneumothorax treatment given. Temperature dropped to normal after four days and remained so until date of discharge, April 13, 1914. The gas was administered six times, and a good collapse of the lung was obtained. Cough and expectoration lessened, but patient developed tuberculous enteritis and was discharged unimproved.

CASE 4 (1311).—I. B., aged 25. Admitted Aug. 16, 1912, with involvement throughout the greater part of the right lung, cavity at top, left lung clear; troublesome cough, profuse expectoration, tubercle bacilli present, temperature ranging from 100 to 101, in the afternoon, pulse and respiration in proportion. Pneumothorax was given Sept. 26, 1913, manometer reading —8, —13, injected 350 c.c. of nitrogen gas, end reading —3, —7. Temperature gradually returned to normal by October 20 and has remained so ever since. Thirty-three refills have been given in all. Patient has only a few spots of mucoid sputum two or three times a month, tubercle bacilli absent since March, 1914; gain in weight 23¼ pounds. This is a case in which an acute, progressive disease was arrested by compression of the lung. Patient is now doing work in the sanatorium and is clinically well. The temperature chart showing the result of the treatment is reproduced herewith.



Temperature chart, Case 4. P, pneumothorax treatment: September 26, injected 350 c.c. of nitrogen gas; September 29, 425 c.c. of nitrogen gas; October 1, 650 c.c. of nitrogen gas; October 9, 575 c.c. of nitrogen gas; October 17, 575 c.c. of nitrogen gas; October 24, 400 c.c. of nitrogen gas.

CASE 5 (1308).—D. C., aged 38. Admitted Aug. 6, 1913, with involvement scattered throughout the greater part of the left lung, moderate consolidation upper part of the right lung; severe cough, profuse sputum, tubercle bacilli present, temperature range 99.5 to 100. Pneumothorax treatment begun Sept. 2, 1913; owing to pleural adhesions only a partial collapse of the lung was obtained. The treatment was continued until November 18. For a while the temperature was somewhat improved, but owing to an acute exacerbation developing in the left lung, complicated by pleurisy with effusion, the treatment was discontinued.

CASE 6 (1275).—A. H., aged 45. Admitted May 14, 1913, involvement throughout the greater part of right lung, infiltration top of left lung; cough severe, profuse sputum, tubercle bacilli present; temperature range 100 to 102. Pneumothorax treatment given July 23, 1913; only partial collapse obtained. Six injections were given in all, temperature range increasing from 102 to 103. Patient unimproved.

CASE 7 (1166).—A. C., aged 20. Admitted Sept. 5, 1912, consolidation throughout greater part of right lung and lower part of left lung; moderate amount of sputum, tubercle bacilli present, troublesome cough, temperature range from 99.5 to 102. Pneumothorax treatment begun Oct. 25, 1912; temperature 100 in the afternoon. In all, eight refills were given, and while we obtained a good collapse of the right lung, and the temperature for a while was decidedly lower, the treatment was discontinued Jan. 9, 1913, owing to decided extension of the disease in the other lung. Patient discharged unimproved.

CASE 8 (1274).—F. W., aged 45. Admitted May 13, 1913, involvement throughout the greater part of the left lung, cavity at top, right lung clear. Moderate amount of cough and expectoration, tubercle bacilli present. Temperature range from 100 to 101. Pneumothorax begun June 18, 1913. Sixteen refills were given in all and a fairly good collapse was obtained. Cough and expectoration lessened. Last treatment was given Dec. 1, 1913. Owing to the disease

developing in the right lung, patient was discharged unimproved.

CASE 9 (1191).—C. M., aged 24. Admitted Oct. 14, 1912, consolidation upper part of left lung, infiltration throughout the rest of lung and a few indistinct râles throughout the right lung anteriorly; temperature range from 99.5 to 100; cough and sputum present, tubercle bacilli found. Pneumothorax treatment begun Dec. 3, 1912; two days following temperature rose to 102 in the afternoon; later dropped to practically normal, with an occasional rise to 99.5 to Feb. 22, 1913. Since that time practically normal temperature until May, 1913, when patient developed pleurisy with effusion, temperature 100 to 103, and the gas treatment, which had been given every two or three weeks, was now discontinued until July 13, 1913, when some of the fluid was removed and replaced with nitrogen gas. This procedure was repeated twice during August. Subcutaneous emphysema developed after one injection, causing some pain, but this entirely disappeared in three days. From July to Sept. 23, 1913, temperature of patient was normal. An extensive laryngeal tuberculosis which she had on admission disappeared. The last time this patient was heard from she was seemingly in good health and working.

CASE 10 (1156).—L. B., aged 39. Admitted July 6, 1912, with consolidation throughout the greater part of the left lung, cavity at top, infiltration top of right lung, a few small râles after cough. Temperature 99.5 to 100, cough troublesome and sputum increasing. As the disease was steadily progressing in the left lung, pneumothorax was given, February 17, and a good collapse was obtained; twenty-seven injections were made in all. Patient developed pleurisy with effusion in June. Treatment consisted at times of removing some of the fluid and replacing with nitrogen gas. Shortly after the treatment was given the temperature dropped to normal, practically no cough, slight sputum, tubercle bacilli absent, signs at the top of the opposite lung improved. Patient gained 11¾ pounds and was discharged much improved; fluid still present at base of left lung.

CASE 11 (1437).—B. S., aged 35. Admitted Aug. 26, 1914; left lung had previously been partially collapsed. Treatment was continued from September, 1914, to January, 1915. During residence patient had an occasional rise of temperature to 99.5; small area of infiltration which was found on admission at the base of right lung remained practically unchanged; slight cough and sputum present on admission disappeared. Discharged improved.

CASE 12 (1307).—M. W., aged 25. Admitted Aug. 4, 1913, slight cough, no expectoration, slight infiltration left apex, right lung clear. Patient did fairly well until April, 1914, gaining 12 pounds. From this time the disease progressed steadily. Beginning Aug. 17, 1914, signs of softening, top of left lung, right clear, cough troublesome, profuse expectoration with tubercle bacilli present, temperature ranging from 100 to 103. Pneumothorax was begun August 18 and was repeated at intervals of a few days to from one to two weeks. A good collapse of the lung was obtained, cough improved, temperature ranging somewhat lower. In October, patient developed tuberculous enteritis, which grew steadily worse, and while the symptoms referable to the lungs improved considerably, patient lost weight steadily and was discharged March 9, 1915, unimproved.

CASE 13 (1260).—M. P., aged 24. Admitted April 19, 1913, with an infiltration of the upper half of the left lung and right apex, moderate amount of sputum, tubercle bacilli present, temperature range from 99 to 99.5. Did fairly well until June, 1914. Pneumothorax treatment begun July 10, 1914; fairly good collapse obtained, nothing heard over left lung, except bronchial breathing and subcrepitant râles at apex. Eighteen refills have been given to date; cough has practically disappeared. Beginning with September, 1914, only one or two spots of mucoid sputum daily, tubercle bacilli not found, temperature normal. Patient is now at the sanatorium receiving the treatment every three to four weeks, and is clinically well.

CASE 14 (1266).—R. H., aged 19. Patient was referred to us by Dr. Fred H. Heise, resident physician, Adirondack Cottage Sanatorium, Trudeau. The following is his report of the case while the patient was under his supervision: "Right lung clear, with the exception of slight changes in voice and breathing at apex; left lung showed infiltration to the third rib anteriorly and to ninth vertebral spine. It was decided to collapse the left lung owing to persistent hemoptysis, and treatment was begun Nov. 24, 1912. Refills were given at intervals of three to three and a half weeks, and two months later the patient had no symptoms and improved so much that she was allowed five minutes' exercise, which was gradually increased to one hour twice daily, when she was discharged from the sanatorium the latter part of April, 1913." Patient was admitted to Stony Wold Sanatorium May 1, 1913, and treatment was continued every three weeks. During residence here, patient had no symptoms and was discharged, Oct. 29, 1913, clinically well. She has been working ever since, and the last time we heard from her she was apparently well and still receiving the pneumothorax treatment.

CASE 15 (1304).—R. S., aged 16. Admitted July 24, 1913. Right lung negative, left lung active infiltration upper half. Cough, profuse expectoration, tubercle bacilli present. Disease was steadily progressing in the left lung, with temperature ranging from 99.5 to 100. Pneumothorax treatment was begun Oct. 8, 1914, eleven refills in all being given. Two days after the initial injection temperature dropped to 99, with only an occasional rise to 99.5, practically no cough, slight expectoration, once or twice a week, tubercle bacilli absent. Patient was discharged March 20, 1915, much improved.

CONCLUSIONS

It is most gratifying that at last we have a rational treatment that can be used in the far-advanced cases. A comparatively few years ago symptomatic treatment, with the hope of temporary relief, was the only one given. The present status of artificial pneumothorax is that in a fair percentage of these hopeless cases we can offer either an arrest of the disease, or a chance of returning to good health. The procedure is, like any other operation, attended with slight dangers, but these are insignificant as contrasted with the fatal outcome if the disease is allowed to go on unchecked. The duration of treatment is one offering the greatest problem. It is impossible, of course, to determine whether the tuberculous foci in the collapsed lung have become entirely cicatrized, even though the patient is clinically well. It is far better to continue the treatment for an indefinite period, extending over years, than to discontinue the compression and discover after a few months that the disease is becoming active again, and when an attempt is made to readminister gas, that the layers of the pleura are densely adhered.

Elements of American Mortality.—Returns available for the United States for the registration area, which includes about 65 per cent. of the total population, show that the general death rate has fallen from 20.8 per 1,000 in 1890 to 14.1 in 1913. Throughout the period under observation the male rate has been in excess of the female rate, and in 1913 the rates were 15.0 for males and 13.1 for females. For the white population the mortality was 14.0 per 1,000, and for the colored 22.9. For white males the rate was 14.9, and for white females 13.1. For colored males the rate was 24.9, and for colored females 21.0. For certain principal causes the comparative death rates for the two sexes were as follows: tuberculosis of the lungs, males, 14.9, females, 12.0; pneumonia, males, 14.7, females, 12.6; accidents, males, 12.8, females, 4.0; urinary diseases, males, 10.8, females, 8.8; cancer, males, 5.8, females, 9.3; typhoid fever, males, 2.5, females, 1.7; suicides, males, 2.5, females, 0.8. The urban death rate for the registration area for the period 1908-1912 was 15.5 per 1,000, and the rural death rate was 12.9.

DIAGNOSTIC THESES IN PULMONARY TUBERCULOSIS

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Since the time of Hippocrates, many medical aphorisms have been published, and as they convey in a concise and at times a clear manner the experience of the writer, they are often read. Such theses must include many well-known facts to which all subscribe, and their *raison d'être* lies in the fact that assent or dissent is at once forthcoming. For the beginner in work in pulmonary tuberculosis, succinct opinions on diagnosis are of great assistance.

DIAGNOSTIC THESES

1. An appearance of ruddy health does not exclude tuberculosis.

2. In any patient with constitutional symptoms, no matter of what he complains, the possibility of tuberculosis must be kept constantly in mind.

3. Prolonged and intimate exposure at any time of life, but especially in childhood, and in home or workshop or office, is vastly more important in diagnosis than "unassociated" or "noncontact" heredity.

4. Prolonged contact with tuberculosis may lead to infection, but debilitating conditions are necessary usually to cause this to develop into clinical tuberculosis.

5. Constitutional or general symptoms lead us to a diagnosis of tuberculosis, while the localizing symptoms point out the organs involved.

6. The history or presence of certain complications, as fistula-in-ano, pleurisy, dry or especially with effusion, adenitis, a discharging ear, coming on painlessly, are all strongly suggestive of tuberculosis.

7. Loss of color, prolonged exposure to tuberculous infection, especially in childhood, with a history of swollen glands at that time, the more recent subjection to debilitating conditions, the presence of unequivocal constitutional and localizing symptoms, with or without the aforementioned complications, demand a diagnosis of pulmonary tuberculosis even though no abnormal physical signs are present in the lungs.

8. *Your* patients, *your* friends, *your* family are as prone to contract and develop pulmonary tuberculosis as hundreds of others.

9. The importance of physical examination in the diagnosis of pulmonary tuberculosis has been overemphasized.

10. Symptoms are a better and more accurate guide to activity than physical signs.

11. Symptoms without physical signs demand treatment, while physical signs without symptoms require only careful watching.

12. Slight but persistent rise in temperature and increase in rapidity of pulse are often present early in the disease.

13. The usual weight of a patient who develops pulmonary tuberculosis is often 10 pounds below the normal weight for his height and age.

14. Failure to interpret rightly the significance of symptoms, to detect the presence of abnormal physical signs, can be condoned; but failure to ask for and examine the sputum repeatedly in any patient with chronic cough is inexcusable.

15. Absence of tubercle bacilli in the sputum means only that bronchial ulceration has not occurred.

16. Auscultation and inspection are the most important procedures in the detection of abnormal physical signs.

17. Inspection reveals localized retraction of the chest wall and limitations of the chest movement.

18. Auscultation is more important than inspection, and the detection of râles by the auscultation of the inspiration following cough is the most important procedure in the detection of physical signs of early pulmonary tuberculosis.

19. Changes in the relative lengths and intensity of the inspiration and expiration are valuable but less easy to detect.

20. The disease is practically always more extensive than the physical signs indicate.

21. Abnormal physical signs in one apex should be considered as due to pulmonary tuberculosis until proved not to be, while those at the base should be looked on as nontuberculous until definitely proved so.

22. The fluoroscope, the roentgenogram and stereoscopic plates may reveal and locate pathologic pulmonary changes to be detected by no other means.

23. When sputum is lacking, or when tubercle bacilli are absent on repeated examinations, the possibility of the presence of bronchiectasis, hyperthyroidism, syphilis and influenza, and more rarely pulmonary tumor and Hodgkin's disease, should be borne in mind.

24. No modification of the tuberculin tests as yet devised differentiates clearly clinical tuberculosis that demands vigorous treatment from nonclinical tuberculosis that requires only a God-fearing life.

25. It may be impossible to determine definitely the presence or absence of clinical tuberculosis.

MEASURES FOR PROMOTING THE NUTRITION IN THE PSYCHOSES*

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At a time when biochemistry and microscopy are achieving such brilliant results in demonstrating the etiology and pathology of disease, a discussion of time-honored methods of treatment may naturally be expected to provoke only a more or less modified interest. Nevertheless, I regard such a discussion as seasonable, and all the more so since the fascinations of science logically tend to diminish confidence in and thus lead to neglect of measures which, though their value may have been ever so amply attested by many years of experience, in their inception at least, were essentially empiric. Not to be misunderstood, I wish to express my most sincere respect and admiration for the efforts that are being put forth with a purpose of discovering a palpable cause of insanity, and hence rational plans of prevention and cure; pending such discovery, however, it is expedient to make the most of what we possess, even though it falls ever so far short of what we desire.

My purpose is to describe briefly certain measures for promoting the nutrition and the manner of their application in cases of insanity, as I commonly employ them in practice. No claim of novelty or originality is made.

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The ingenious hypothesis that a given case of insanity may be due to infection and that hypernutrition might promote a cure by facilitating the formation of antibodies, or any other theory that may be set up to account for its favorable effect on the course of the disease, does not call for discussion here. The assumption is simply made that in a large proportion of patients suffering from various forms of the acute psychoses, promotion of the nutrition is a prominent indication of treatment. It is further assumed that the nature of the patient's malady is such as to impair more or less his cooperation with efforts made in his behalf, or even to induce him to offer the most determined resistance to them. Under the conditions postulated the effective application of any and all measures demands that the patient be all the time surrounded with adequate provisions for his control, or indeed be subjected to the exercise of arbitrary authority resting on a basis of physical force, either active or potential. For various reasons largely economic, because a physician experienced in such cases, the only proper source of arbitrary authority, should be always at hand to relax, or reinforce this, according to circumstances, these patients are best treated in a specially equipped institution.

THE STOMACH PAD

The procedure to which I wish first to call attention is the use of the stomach pad. My practical acquaintance with it was gained many years ago from a masseuse who conducted a very successful rest cure, and who regarded the employment of this measure as one of the principal factors which had contributed to the establishment of her reputation. Patients who had become emaciated to the last degree, through inability to digest their food, though they had been quite refractory to the most skilful medication, lavage and what not, promptly responded to the so-called rest cure, of which the stomach pad constituted one of the essential components, when all medicine, with the exception of indicated laxatives, was withdrawn. To be sure, these patients differed in many particulars from those under consideration. Their cooperation could be relied on. The full effects of rest in bed, thorough mastication and massage were available. Nevertheless, since the therapeutic problem is identical in each instance, if the stomach pad has any considerable utility in promoting digestion and assimilation, its claims should certainly command respectful attention.

The elaborate and convincing investigations of Henry Head[1] demonstrate that the functional activity of the several abdominal and thoracic organs or viscera is sensibly promoted by stimulation of the skin lying over them. There are pathways for the passage of nervous stimuli from the skin through the spinal cord and thence to the underlying viscus; hence it would appear that the empiric, and for centuries at least popular practice of counterirritation, after all, rests on a sound scientific basis.

The heat is conveniently applied by means of dry wheat bran, as follows: A cotton or linen container of the proper size and shape is filled with bran. I advise having it extend the whole width of the abdomen from the nipples to the pubes, and made with a box border about 2½ inches in depth. The pad should not be stuffed so full that it cannot easily conform to the contour of the body. It may be heated in an oven at a temperature of about 300 F. to be made ready for application. When applied, it may be covered with oiled silk and blankets to retain the heat. This is much lighter, and patients usually pronounce it more comfortable than the various forms of moist or wet heat as, for instance, the flaxseed poultice. Though I was originally strongly prejudiced in its favor, the electric pad as a means of applying heat has for several reasons quite disappointed my expectations.

Incidentally it may be stated in this connection, although hardly a matter of minor importance, that the tranquilizing effect of the hot stomach pad, in cases characterized by considerable excitement, is sometimes quite striking. It was long ago demonstrated that in natural sleep the volume of blood in the extremities is sensibly increased and that consequently the brain becomes correspondingly anemic; hence for the purpose of dilating the vessels of the extremities and the portal circulation and thus facilitating sedation and hypnosis, the application of heat to the extremities and the epigastrium is a rational procedure. And, while in a large majority of highly excited cases when not used in conjunction with medicinal remedies it cannot be relied on to induce promptly either sleep or sufficient sedation, it embraces a principle of very wide application and enormous value in the treatment both of the psychoses and the neuroses, or combinations of them. The maximum sedative and hypnotic effect of the principle is of course attained by employment of the full hot bath, in conjunction with cold to the head.

FEEDING

When the food is well relished, the solids and semisolids thoroughly masticated, and liquids slowly sipped, no doubt the process of digestion progresses much more easily and satisfactorily than when opposite conditions prevail. Unfortunately, in the psychoses it only too frequently happens that none of these aids to digestion are available; even in those cases in which by persuasion, scolding, coaxing, or what not, enough food may be swallowed, all of them are commonly wanting. In these patients the use of the stomach pad is of distinct value. If it can be kept in position while the meal is being given, the patient meanwhile lying on his back, as is the ordinary practice when mental disorder does not have to be reckoned with, so much the better; the application is continued from forty-five minutes to an hour after the meal is finished.

When liquid food must be introduced artificially, let this, at or slightly above normal bodily temperature, pass into the stomach very slowly through a small tube, the pad being employed as indicated above. To be sure, since there are numerous and wide variations in the phenomena presented by individual cases of the psychoses in which "building up" measures are urgently demanded, as well as in others, no fewer or less pronounced modifications have to be made in the practical application of any procedures intended for their relief. Long and intimate experience with these phenomena and their individual variations is essential to a reasonable comprehension of their significance; hence such experience is likewise essential to the exercise of sound judgment in the employment of any and all means that may be advocated or made use of in the treatment of the psychoses.

REST IN BED

In a very considerable proportion of patients afflicted with various forms of the acute psychoses,

1. Head, Henry: Brain, 1893, iv, 6.

whose symptoms are such as to present formidable obstacles to the problem of satisfactorily meeting the nutritional indications, intense and inveterate restlessness is one of the most common and prominent morbid manifestations. Even when a liberal amount of nutritious food is introduced and well digested, the patient may steadily lose weight on account of the exhaustive character of his restlessness or agitation together with the concomitant loss of sleep; hence an effort to secure even a modicum of rest should never be neglected. It almost never happens that rest in bed, as it is carried out in the so-called rest cure, is feasible; even in the most favorable cases, modifications or compromises have to be made. And since patients will rarely accept massage in lieu of exercise, even in those rare instances in which absolute rest might be secured, it would be of doubtful advantage.

Unhappily, in practice we are usually obliged to content ourselves with making the attempt, in each case, to strike a balance between the damage the patient is sustaining from the excitement incident to the natural course of his disease, and the injury he might suffer from employment of some of the various resources at our command for the purpose of reducing the morbid activity. As an exceedingly general proposition, if in the course of a few days by dint of intelligent and persevering effort a patient can be successfully trained to remain in bed till noon without persisting in exhaustive efforts of resistance, a position of enormous advantage has surely been gained in the nutritional struggle. After dinner the desired amount of outdoor air and exercise may be prescribed.

FRESH AIR AND SOUNDPROOFED ROOMS

The value of an abundance of fresh air as an essential element in the promotion of nutrition can hardly be overestimated; and unfortunately it only too frequently happens that, from various considerations, the class of patients under discussion cannot be much if at all outdoors for weeks or months together; and, indeed, at the same time it may be expedient to keep the doors and windows of their rooms closed. Since it has been demonstrated over and over again that continued close confinement in poorly ventilated rooms is by far the most potent etiologic factor of pulmonary tuberculosis, that this cause operates by reducing the nutrition, and that the nutrition is most effectively restored and the disease cured by keeping the patient continuously in the open air, the vast importance of sound-proof or muffled rooms with ample forced ventilation in attaining the end in view is obvious. Observed from a still different angle, the enormous advantage of these rooms in the solution of the difficult nutritional problem which many cases of the acute psychoses present is plainly seen. The more or less profound disorder of digestion inevitably produced by the regular administration of full doses of sedatives and hypnotics is too well understood to require comment. In the practical operation of a hospital, however, it is manifestly unjust to permit the disturbance made by, say, 5 per cent. of the patients to deprive the remaining 95 per cent. of perhaps several hours' sleep at night and seriously interfere with their comfort and tranquillity by day as well. Without the resource which these rooms supply when instances of individual excitement occur, the principle of "the greatest good to the greatest number" has to be brought into requisition. When these rooms are available, however, the physician is relieved of all obligation to administer a harmful remedy to one of his patients for the benefit of others. And though the degree of sound proofing falls far short of what might be desired, ten years of experience with these rooms has confirmed the conviction which prompted their installation; this conviction is that they are indispensable to the fair and proper treatment of a considerable proportion of cases of the acute psychoses. Unfortunately, candor compels me to confess that the conclusions I have reached in this connection and the facts on which I have based them are all ignored, almost entirely, both by our profession and the laity. It may be asserted without much fear of contradiction that no instance can be cited in which either a patient's family or his physician in selecting accommodations for treatment ever gave the slightest weight, in reaching a decision, to the considerations here advocated. The installation and operation of these rooms involves a considerable expense, and in the existing attitude of the public and our profession regarding their value, whoever makes use of them may indeed augment his own sense of satisfaction and self respect, but from a financial standpoint he places himself in a position to be called a fool for his pains.

As a means of improving the nutrition, it is altogether feasible to keep a considerable proportion of patients suffering with various forms of the acute psychoses outdoors during the day time, using the same methods to protect them against inclemencies of weather as are followed in tuberculous cases. For various reasons, however, as a reliable measure of treatment in these cases, it would rarely if ever be expedient to attempt to inaugurate outdoor sleeping. For the satisfactory application of the outdoor method of treatment, enough pavilions are desirable to permit of proper classification. These should open to the south and be provided with concrete floors and walks leading to them so that weather conditions do not have to be reckoned with. The salutary effects of outdoor life in promoting nutrition do not demand the services of an advocate.

HYDROTHERAPY, MASSAGE AND OCCUPATION

Although hydrotherapy, massage and occupation may be regarded as somewhat less direct in aiding the nutritional process than some of the agencies previously mentioned, when conditions are favorable to or perhaps even admit of their exhibition, any or all of them may be of great service. The indications for their use, and the form and manner of their application, especially with reference to the last, could be easily expanded to the dimensions of a chapter. In conclusion and somewhat by way of digression, and at the same time as a note of caution, permit me to state briefly a concrete case, illustrating the unfortunate effects that may result from insufficient supervision of prescribed occupation.

Some years ago while in state service, I prescribed a review of her school work for a young woman formerly a teacher. This patient of the dementia praecox type had been comparatively comfortable for several years, with some supervision dressed herself properly, was able to participate in the various forms of diversion usually provided in state hospitals, and was in a fairly satisfactory state of bodily health. She took to the work eagerly; but while her teacher and myself were congratulating ourselves on the success of our plan, the patient passed quite rapidly into an attack of

high excitement very much like that which occurred at the onset of her disease, and from which she emerged a few months later on a little lower plane than before. Whenever this circumstance has recurred to my mind, it has always been accompanied by the conviction that this defenseless patient was a victim of my misdirected enthusiasm and inadequate attention. Of course an experience of this kind does not cast discredit on occupation as a valuable resource in the care and treatment of the insane; it simply emphasizes the necessity of studying each and every case both deeply and broadly, and of maintaining a close observation of and active interest in them to the end of the chapter.

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A RAPID AND SIMPLE METHOD OF TESTING DONORS FOR TRANSFUSION *

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The increasing popularity of transfusion as a therapeutic measure has brought with it the need of a test whereby the suitability of donors may be rapidly determined. There are already many instances on record of serious symptoms or death following the rapid breaking down of blood after transfusion. The evidence is convincing that such instances may be avoided if a donor is selected beforehand by means of certain simple tests carried out in vitro. Unfortunately these, as performed at present, require time and labor. It is with the aim of providing a test rapid and simple enough to be employed even in emergencies that the following method has been devised:

METHOD

Collection of the Blood.—The blood is taken from the patient and the prospective donors in a 1:10 mixing pipet, such as is used in counting leukocytes. The pipet is rinsed beforehand with 10 per cent. sodium citrate in water, the citrate solution is drawn up to the mark 1; the pipet is rapidly filled with blood from a puncture of the ear or finger; and without pause the mixture is expelled into a small, narrow test tube. There is thus obtained a citrated blood containing slightly less than 1 per cent. of citrate. The pipets which we have employed hold only 0.25 c.c. of fluid. This much blood is easily obtained from a single puncture. There is no objection to increasing the flow by pressure. Should it cease before the pipet is full, the blood must be at once expelled into a test tube, in order that it may mix with the citrate and clotting be avoided. The mixture is then taken up again, a new puncture made, and the pipet completely filled. After each blood is obtained, the pipet is rinsed with citrate, then with distilled water, then with fresh citrate, and it is ready for another blood. If several donors are to be tested, two pipetfuls of citrated blood should be obtained from the patient. It is best to take them from different puncture wounds, in order to avoid a possible clotting in the pipet.

Mixing.—The mixing is done in pipets with a capillary end—the so-called Wright pipets obtained by drawing out glass tubing in the flame. The citrated bloods are used as such, and two combinations are made of the patient's blood with that of each prospective donor—a mixture containing nine parts of the patient's blood to one of the donor's, and a mixture of equal parts of the two. The proportions used need be only approximate. In case of emergency the first of the mixtures will suffice, since by its use the most dangerous possibility, namely, that the blood of the recipient may destroy that of the donor, can be ruled out. Following the technic usual with Wright pipets, the capillary tube is marked, blood is drawn to the mark, and each column of the blood is separated with an air bubble from the next that is drawn up. To insure proper mingling, each mixture should be expelled on a slide, or Widal plate, and then drawn high in the pipet, which may be sealed off in the flame in case the examination is not to be made for some time.

Incubation.—No incubation in the ordinary sense is necessary. The pipets are kept at room temperature, and readings are begun after two minutes, if there is need to hurry. The readings are for agglutination, and even within two minutes this is plainly evident, except when the agglutinating forces are notably weak. In the final choice of a donor it is safest to rely on results obtained after the mixtures have stood for fifteen minutes. But the ruling out of individuals with unfit blood may be begun practically at once.

Readings.—The capillary end of each pipet is broken, a small drop of the blood expressed on a slide, a large drop of normal salt solution superimposed without mixing, a coverslip put on, and the preparation examined for agglutination under the microscope. Fresh preparations can be made at intervals if desired. The salt solution is not absolutely necessary; but very clear pictures are obtained as the blood spreads in it. When agglutination has occurred, the red cells show a characteristic clumping, sometimes in small masses, often in large ones that are very evident macroscopically. The clumps in each preparation are fairly uniform in size. The picture is absolutely different from that in mixtures of nonagglutinating bloods under similar conditions. In these, the cells lie free or in rouleaux, just as in a single blood. But in agglutinating mixtures the cells are stuck together "every which way," and, where the film is thin, they do not separate but lie connected with one another in irregular heaps. If pressure is put on the coverslip, a very characteristic phenomenon may sometimes be seen. The agglutinated cells pull out in strands as though they consisted of some sticky substance. The most striking pictures are encountered when there are nine parts of an agglutinating blood to one that is agglutinated. Here large discrete masses lie scattered amid unclumped red cells.

If there is no clumping in the preparations made after the mixtures have stood fifteen minutes, the assumption is warranted that the bloods do not agglutinate or hemolyze each other. The experience of previous workers has taught that in such instances transfusion is safe. But if clumping is present in the 9:1 mixture and to a less degree or not at all in the 1:1 mixture, it is certain that the blood of the patient agglutinates that of the donor and may perhaps hemolyze it. Transfusion in such cases is dangerous. Clumping in the 1:1 mixture with little or none in the 9:1 indicates that the plasma of the prospective donor agglutinates the cells of the prospective recipient. The risk from transfusing is much less under such circumstances, but it may be doubted whether the blood is as useful as one which does not and is not agglutinated. A blood of the latter kind should always be chosen if possible.

For practical purposes these findings suffice. But if there is a desire to know whether *both* bloods contain agglutinins, a 1:9 mixture should be made. If this and the 9:1 mixture show large clumps, whereas the clumps are smaller when the bloods are mixed in equal parts, two agglutinins must be present.[1] Should there be only one agglutinin, little clumping or none will be observed when the blood containing the agglutinin is diluted with nine parts of the other blood.

Difficulties.—The single technical difficulty of the method is that of clotting, and to avoid it the blood should be taken as rapidly as possible. With normal blood, trouble is seldom experienced, but in pathologic instances a thin web may form in the test tube into which the blood is expelled. The clotting

* From the Laboratories of the Rockefeller Institute for Medical Research.

1. This phenomenon has been described by Ottenberg in an interesting study of the conditions under which human bloods show agglutination. He used mixtures of defibrinated whole blood. (Ottenberg, R.: Jour. Exper. Med., 1911, xiii, 425.)

begins in the calibrated tube of the pipet which, as the blood is taken, is swept free of citrate; and the use of a strong citrate (15 per cent.) will not prevent it. But the clot is always thin and may be picked out of the blood and the latter used for the tests. In the pipet even small clots are troublesome, since they form a locus for new ones when another blood is taken. They are best dissolved out with 5 per cent. potassium hydroxid.

The likelihood that something else may be mistaken for agglutination is practically nil. The presence of fibrin strands and clumps of platelets and white cells absolutely differentiates bits of clot. Dried blood will not be found except in case of carelessness, and it is unlikely to cause confusion. Its nearly homogeneous, cheesy appearance under the microscope is sufficiently distinctive.

COMMENT

The test here described has some features in common with two of the methods already in use. Therefore, to point out wherein it is an advance over these will not seem amiss. Epstein and Ottenberg[2] use Wright's pipets, collecting blood in them for serum, and making the ultimate test mixtures in them. But the mixtures consist of serum and washed red cells; they are incubated for two hours, and the readings are macroscopic. Weil[3] employs citrated bloods, making, in test tubes, three mixtures of the same relative proportions as ours. Two c.c. of each blood are required, thus making necessary aspiration from a vein; the tubes are incubated for an hour, and the readings are macroscopic. By means of the test of Epstein and Ottenberg, aspiration from a vein is avoided; and by Weil's method the need to separate serum, wash the red cells and make reciprocal observations is done away with. In both instances, however, the time and the labor of testing donors is very considerable. Using our method, it is only necessary to obtain citrated bloods from a finger-prick, make two mixtures of them in capillary pipets, and, by reading with the microscope, the test is finished within a few minutes.

The method involves several important assumptions. They may be summed up in two questions: 1. Is the presence or absence of agglutination an index to the injurious qualities of a blood? 2. Are the microscopic findings with mingled, citrated bloods that have stood fifteen minutes at room temperature as certain in their indication as macroscopic findings after longer periods with mixtures of serum and 5 per cent. washed red cells—that is to say, as certain as the test most used at present?

The first question can be answered from the literature. Leaving from consideration disease in the donor, two injurious influences must be thought of when a foreign blood is introduced into the human body, namely, hemagglutination and hemolysis. The latter is far the more serious. Moss[4] has found in extensive observations that agglutination frequently occurs without hemolysis, but that hemolysis is always associated with or preceded by agglutination. This conclusion he has substantiated with seventy-five successful transfusions[5] in which the donors were selected by means of the agglutination test. It is well known that human beings fall into four groups as regards the agglutinins in their serum and the capacity of their corpuscles to be agglutinated. Moss was careful to select for transfusion individuals of the same group. Without going deeply into the matter we may say that, when serum and washed cells are used, reciprocal observations are necessary to determine whether two individuals belong to the same group. But in mixtures of whole citrated bloods, agglutination is only absent when this is the case.

In our test, agglutination is looked for with the microscope. This does not mean that macroscopic readings are impossible, for when clumping is at all outspoken in the slide preparation, it is plainly evident to the naked eye. Observations can, in emergency, be made in this way. But with the microscope, as one would naturally suppose, the readings are more sensitive and more precise. When antirabbit goat serum is mixed with rabbit red cells, clumping is observable microscopically in dilutions of serum much higher than those in which it is evident macroscopically in the test tube. This can be noted also with dilutions of an agglutinating human serum mixed with human red cells and with undiluted human serums weak in agglutinins. An agglutinative clumping is rarely doubtful microscopically, for the cohesion of the cells, even when only two or three are concerned in each clump, is absolutely different from rouleaux formation. In the test tube an agglutination is often difficult to distinguish from sedimentation; and the shaking which throws up the clumps into the fluid that they can be viewed may break them so that they do not reform.

Our experience is that if agglutination occurs at all it will be noticeable microscopically within five minutes. But it is better to let the mixtures stand longer. We have no hesitation in saying that agglutination can be told with the microscope as certainly after fifteen minutes as in two hours with the old macroscopic method. The explanation of this is probably simple. The clumps which become visible in the test tube after an hour or more are in general not the primary clumps of an agglutination, but the result of the massing together of many such clumps, which themselves are often small. Such secondary massing requires time, whereas the primary clumps form almost immediately.

That agglutination is sometimes better at room than at body temperature is well known.[6] Repeated trial has shown that the incubation of our agglutinating mixtures seldom increases the rapidity of the reaction. In some instances agglutination was much more pronounced after fifteen minutes at room temperature than in two hours at body heat. An altered distribution of the agglutinin may account for this.

It has been repeatedly shown that an excess of red cells may mask the presence of an agglutinin or hemolysin, and that hemolysis is much influenced by the presence of neutral serum. Agglutination is practically independent of this latter factor.[7] The influence of small amounts of sodium citrate does not seem to have been determined. The following is one of several experiments dealing with these points in their relationship to our test:

PROTOCOL OF EXPERIMENT

By venous puncture some cubic centimeters of a human blood, *A*, were taken with citrate (1 part 10 per cent. citrate to 10 parts blood) and some obtained for serum. Graded

2. Epstein, A. A., and Ottenberg, R.: A Method for Hemolysis and Agglutination Tests, Arch. Int. Med., May, 1909, p. 586.
3. Weil, Richard: Sodium Citrate in the Transfusion of Blood, THE JOURNAL A. M. A., Jan. 30, 1915, p. 425.
4. Moss, W. L.: Johns Hopkins Hosp. Bull., 1910, xxi.
5. Moss, W. L.: Am. Jour. Med. Sc., 1914, cxlvii, 698. See also, for the bearing of agglutination on transfusion, Ottenberg, Reuben, and Kaliski, D. J.: Accidents in Transfusion, THE JOURNAL A. M. A., Dec. 13, 1913, p. 2138.
6. Paltauf, R., in Kolle-Wassermann's Handbuch der pathogenen Mikroorganismen, ii.
7. Hektoen, Moss, Ottenberg.

dilutions of the serum were made with salt solution, and mixed in small test tubes, as also in Wright's pipets, with equal parts of 5 per cent. suspensions in salt solution of certain washed red cells, *B* and *C*, which the undiluted serum agglutinated.

Dilutions of the plasma of the citrated blood *A* were made, similar to those of the serum, but the proportion of red cells was kept the same as in the original citrated blood. For this the citrated blood was distributed in a number of graduated tubes, centrifugalized rapidly, the supernatant fluid measured and diluted appropriately, and, when the red cells had been suspended and centrifugalized, all of the fluid was pipetted away except the original volume, and the cells were resuspended. The diluent used was sodium citrate in salt solution (1 part 10 per cent. sodium citrate to 9 parts 0.95 sodium chlorid). Nine parts of each of the combinations thus obtained were mixed in Wright pipets with one part of the whole citrated bloods *B* and *C*. The microscopic findings after fifteen minutes were compared with those in the serum mixtures after one and two hours. They gave identical results. Agglutination occurred when dilutions of serum or plasma up to 1 part to 7 of the diluent had been used for the mixtures, but not when 1 part to 15 had been employed. It was slight with 1:7 plasma and no better marked with 1:7 serum.

The experiment shows that a weak agglutinin may be demonstrated quite as well with mixtures of citrated whole bloods as with serum and a diluted suspension of washed red cells in salt solution. The interference of neutral red cells does not constitute a difficulty.

CONCLUSION

The test here described compares well in delicacy with those already in use, but we wish to insist only on its practicability. It enables one to determine within a few minutes, so far as agglutination and hemolysis are concerned, whether or not the blood of a donor is suitable for transfusion.

INTRASPINAL ADMINISTRATION OF ANTITOXIN IN TETANUS

NOTES ON A SERIES OF CASES *

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As the result of a series of animal experiments conducted at the Research Laboratory of the Department of Health by Dr. William H. Park and myself[1] in order to determine the curative value of the intraspinal administration of tetanus antitoxin, and by which the superiority of this method was conclusively shown, every effort has been made during the past year to get into immediate touch with physicians and hospitals in and about the city of New York having cases of tetanus under their care, and induce them to give antitoxin as soon as possible by the following method:

1. From 3,000 to 5,000 units into the lumbar region of the spinal canal, preferably under an anesthetic, the volume of fluid injected being brought up to 10 or 15 c.c. by the addition of sterile normal saline, the exact amount being regulated according to the age of the patient and the amount of spinal fluid withdrawn.
2. Ten thousand units intravenously at the same time.
3. Repetition of the intraspinal dose in twenty-four hours.
4. A subcutaneous dose of 10,000 units three or four days later.

The well-recognized adjuvants to specific treatment — quiet, subdued light, sedatives, etc. — were, of course, understood as a necessary part of the therapeutic measures.

In no case has the physician objected to giving an intraspinal injection of antitoxin when so advised. Some, however, have given it in much greater quantities and by other methods in addition to that recommended, usually before I was able to consult with them.

Reports of twenty cases have thus been collected, in all probability representing a majority recognized as tetanus during this period in and about the city of New York. I have seen about half of the patients personally, in consultation. In others, the physicians have been kept in constant touch by telephone or through a clinical assistant during the progress of the case. In four cases, the histories have been furnished by the physician on request, the treatment given being exactly that recommended by the published article referred to above. In all cases the antitoxin used was furnished by the Department of Health.

A brief abstract of the clinical histories follows:

CASE 1.—F. D., girl, aged 10 years, seen in consultation with Drs. W. B. Anderton and A. A. Smith, fell, striking her forehead on the ground, receiving a lacerated wound three-quarters inch long over one brow. This was properly disinfected and sutured, healing promptly. Seven days later there was a facial paralysis on the side on which the wound was received. Thirty-six hours later, the jaws were firmly locked. Eight hours after this symptom was noted, the patient received 3,000 units of antitoxin intraspinally and 10,000 intravenously. Several subcutaneous injections were later given. The tetanic spasms were largely confined to the muscles of the jaw and pharynx, and later, the abdominal muscles; attempts at swallowing and the slightest external irritation caused contractions of the muscles of the throat and larynx, cyanosis, general convulsions and unconsciousness. Such convulsions occurred on fifty or more occasions, together with innumerable minor spasms. Pneumonia developed later, resolution being very long delayed. After a protracted convalescence and extreme emaciation, the patient made a perfect recovery.

CASE 2.—Thomas B., laborer, was admitted April 1, 1914, to the New York Hospital, with multiple lacerations of scalp and traumatic amputation of toes of the right foot. The wounds were immediately disinfected with iodin and irrigated with iodin solution. The following day, amputation of the toes was performed. April 10 (incubation nine days), there was slight stiffness of the jaws, which was not reported until the following morning. April 11, 1,500 units of antitoxin were given in the tissues about the wound and 3,500 intravenously, later on the same day, 3,000 units into the tissues about the wound and the same amount intravenously. April 12, the patient was very much worse, and was given 13,000 units intravenously, 8,000 intraneurally and 7,000 into the tissues about the wound. April 13, I was first consulted and the patient visited. His condition was still more unfavorable. There was marked opisthotonos. Eight thousand units of antitoxin were given into the spinal canal and 9,000 intravenously. Following the intraspinal injection the temperature rose to 105; there were severe headache, convulsions and semicoma. April 14, the patient was comatose throughout the day. April 15, the patient was conscious, and there was less rigidity. April 16, there was much less rigidity; the patient swallowed fairly well for the first time. The patient continued to improve and was discharged cured, April 30.

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* From the Research Laboratory, Department of Health, New York.
* Read at the Meeting of the Association of American Physicians, Washington, D. C., May 11, 1915.
1. Park, W. H., and Nicoll, Matthias, Jr.: Experiments on the Curative Value of the Intraspinal Administration of Tetanus Antitoxin, THE JOURNAL A. M. A., July 18, 1914, p. 235.

Comment.—Through a series of misunderstandings, this patient received still further intravenous injections of antitoxin following the intraspinal dosage, although an examination of his blood showed a tremendous antitoxic content. How much credit should be given the single intraspinal dose for the recovery in this case it is difficult to say. It is to be noted, however, that the first real improvement followed shortly after its administration.

CASE 3.—Gustav H., aged 23, carpenter, admitted to St. Vincent's Hospital, June 27, 1914, had injured the tips of his fingers in some way, June 16. A definite history could not be obtained. Three days before this, the patient had a pustule on his neck, which was opened on the 20th. There was no other history of injury. June 21 (incubation five or eight days), he first noticed that his jaw was stiff; two days later, this was much more marked and had spread to the neck, back, arms and legs. On admission, there was marked opisthotonos, and the jaws were tightly locked. The slightest disturbance caused a convulsion. The patient's body rested on the heels and back of the head. The abdomen was boardlike. Treatment on the first day after admission consisted of 5,000 units of antitoxin intraspinally and 5,000 intravenously; June 28, 5,000 subcutaneously. The opisthotonos continued. July 1, 5,000 units were administered intraspinally, five hours after which the patient became delirious with a rise in temperature to 105. From July 4 to July 8, the rigidity decreased daily. July 18, the patient was discharged, cured.

CASE 4.—Boy, said to have been vaccinated sixteen days previously, the vaccination wound having apparently become infected one week after vaccination, developed a slight stiffness of the jaw. Four days after the onset of this stiffness, he was admitted to the Roosevelt Hospital, where it was noted that the legs were very stiff, the arms less markedly so. There was slight trismus. He was given, on admission, 2,500 units intraspinally, 5,000 units intravenously and 1,500 units intramuscularly and in the tissues about the wound. The latter two injections were repeated the next day. On the third and fifth day he received intraspinal injections. Improvement in symptoms began about the third day and continued until discharge thirteen days after admission, when patient was well.

Comment.—This case, though comparatively mild, was unquestionably one of tetanus. Many of the injections given could well have been dispensed with.

CASE 5.—G. T., boy, aged 10 years, was admitted to New York Hospital, Oct. 9, 1914. October 2, he ran a rusty nail into the sole of the left foot. October 9 (incubation seven days), there was stiffness of jaws, and some antitoxin (dose not known) was given intramuscularly. On admission, the teeth could not be separated and there was some tension in the calf of the left leg. All reflexes increased. Eight hours after admission, 3,000 units of tetanus antitoxin were given intraspinally and 1,500 about the wound, which had been opened. A few hours later, 1,000 were given intravenously. During the night, there were minor convulsions, accompanied by piercing screams every fifteen minutes. On the 12th, there were some dysphasia, abdominal rigidity and stiffness of the neck. The teeth were separated one-half inch. Intravenous injection of 9,000 units was made; there were general convulsions. October 11, there were convulsions lasting ten minutes, opisthotonos and a great deal of pain. October 12, there were convulsions for twelve minutes, stertorous breathing, cyanosis and great rigidity for half an hour following. October 13, the boy was comfortable and swallowed well. Intraspinal injection was made of 5,000 units. From October 14, there was a gradual improvement. The patient was discharged, cured, October 24.

CASE 6.—M. B., boy, aged 8 years; was admitted to Bellevue Hospital June 17, 1914. The history of injury due to a fall six days previously and the presence of an old ulcer on the right shin did not serve to establish the incubation of the disease. Five days before admission his jaw began to be stiff. This stiffness extended to other muscles day by day. On admission he was absolutely rigid from his neck to his feet. His teeth could be separated but one-fourth inch. June 18, under an anesthetic, he was given 5,000 units of antitoxin intraspinally and 5,000 subcutaneously. The mind was perfectly clear; the arms alone could be moved freely. There were incontinence of urine and feces. The boy was fed by gavage. June 25, he was very much improved. He bent at the waist when lifted. The mouth opened five-eighths inch. June 28, he moved the legs and arms freely; the spine was no longer stiff; the mouth opened widely; he ate well.

Comment.—This child was in a desperate condition at the time of giving antitoxin. On theoretical grounds we should not expect that antitoxin would be of much avail, when given at so late a period of the disease, and yet the improvement followed so soon after its administration that it would seem that antitoxin should be given the credit for it.

CASE 7.—R. M., boy, was admitted to the Hospital of the Holy Family, April 15, 1914, having run a nail in the sole of his foot at some time previously not possible to determine. There was apparently locking of the jaws three days before admission, at which time the muscles of the neck and back were rigid. The wound on the sole of the foot was opened and dressed. April 16, 5,000 units of antitoxin were given intraspinally, 10,000 intravenously and 3,000 intramuscularly. The child's condition gradually improved, and he was discharged cured about two weeks after admission.

CASE 8.—D. R., boy, aged 10 years, a patient of Dr. Ramsdell of White Plains, complained, Sept. 14, 1914, of pain in the back and slight stiffness of the jaw and of left arm. This child was vaccinated August 17. August 31, the vaccination wound not having been dressed for nine days, was in an unfavorable condition, there being considerable pus at the site of vaccination and swelling of the arm. A shield was later applied, on the mother's initiative. There was a further history of injury to the wound on several occasions. The incubation of the disease could not, therefore, be determined. The symptoms of tetanus increased until September 18, when the patient was given an intraspinal injection of 5,000 units of antitoxin and 45,000 units (through a misunderstanding) intravenously. Following this, there was a marked exaggeration of all the symptoms; a rise of temperature and opisthotonos, lasting about forty-eight hours. The patient gradually improved and was discharged cured in two weeks.

CASE 9.—Boy, aged 6 years, a patient of Dr. Joseph Wheelwright, gave a history of trauma nine days before the locking of the jaws. Forty-eight hours later an intraspinal injection of 5,000 units and intravenous injection of 10,000 units of antitoxin were given. Subsequently this was repeated. The case was a very severe one with many convulsions, and the patient recovered fully in the fourth week.

CASE 10.—A., male, at St. Vincent's Hospital, following a traumatic amputation of finger fourteen days previously, developed severe spasms of the abdominal muscles; later his jaw became locked and the rigidity was general; there were a number of convulsions. Thirty-six hours after the development of symptoms, 5,000 units of antitoxin were given intraspinally and 10,000 intravenously. There was marked anaphylaxis immediately following the injection, with urticaria covering the entire body and suggestion of edema of the glottis and lungs. This passed away shortly after the administration of a large dose of epinephrin. The intraspinal dose was repeated forty-eight hours afterward, as the patient had grown worse and had had a number of convulsions. The serum reaction following this was not so severe as in the first instance. Improvement in symptoms began to show in two or three days, the patient making a perfect recovery from his tetanus, but developed mental symptoms consisting of intermittent attacks of acute mania and delusions of persecution. After a number of weeks this completely disappeared and his condition was normal.

CASE 11.—T. D., woman, aged 30 years, was seen by Drs. William H. Ross and H. E. Chauvin of Brentwood, N. Y., September 30, 1914. She had given birth to a child two weeks previously in very dirty surroundings. The symptoms of tetanus were very marked, and many convulsions continued for five days. Two days after the onset of symptoms, 10,000 units of antitoxin were given intraspinally and 5,000 intravenously; the later dose was repeated three times in

three successive days. The patient was discharged cured except for a slight trismus which lasted for three days longer, October 11.

Case 12.—R. W., boy, aged 11 years, was seen by the physicians mentioned above, Sept. 6, 1914. There was a wound over one patella, received eleven days previously. Five thousand units of antitoxin were given intraspinally and 5,000 intravenously on the day following the development of symptoms. The intravenous dose was repeated. Eight convulsions occurred during the first three days, the temperature running high during this time. The patient was discharged cured eight days after admission.

Case 13.—W. M., man, aged 20, seen by the same physicians Jan. 3, 1915, had received a punctured wound of the instep three weeks previously. There was complete trismus and stiffness of the whole body. Ten thousand units of antitoxin were given intraspinally and 5,000 intravenously the day after the symptoms were noted. The intravenous injection was repeated the next day. The patient was discharged cured in two weeks.

Case 14.—M. G., woman, aged 22, gave no history of traumatism. Four days before admission to the Lebanon Hospital, there was slight rigidity of the neck and difficulty in opening the mouth. The next day the jaws were completely locked. On the day before admission she had general convulsions. On the day following admission, five days after the onset of symptoms, she was given 5,000 units of antitoxin intravenously and 750 units intraspinally. On the second and third days she was given 5,000 units intraspinally under an anesthetic. The patient also received injections of magnesium sulphate (25 per cent.) subcutaneously and intramuscularly three times a day in doses of 30 c.c. for seventeen days, without apparent relaxing effect. The course of the disease was rather protracted with many convulsions. The patient was discharged cured seven weeks after admission.

Case 15.—L. M., male, aged 18 years, was admitted to St. Peter's Hospital, March 27, 1915, with a crushed and lacerated wound of the great toe. The wound was immediately disinfected and properly dressed. March 30, the tip of the toe sloughed off. April 6, the patient had a severe chill and complained of sore throat. There was noted a slight stiffness of the jaw. In the afternoon there were marked stiffness of the back, and occasional slight convulsions when the patient was disturbed. Twenty thousand units of tetanus antitoxin were given intraspinally four hours after the occurrence of the chill. On the 7th, the symptoms increased in severity, convulsions occurring on the slightest irritation. There were marked opisthotonos and rigidity. Ten thousand units of antitoxin were given intraspinally under an anesthetic. On the 8th, the patient's condition was about the same. Ten thousand units of antitoxin were given intravenously. After the tenth day, the convulsions stopped; the rigidity continued some time longer. April 22, the patient was up and about with slight rigidity. He was discharged cured a few days later.

Case 16.—M. S., man, aged 24, admitted to Bellevue Hospital Feb. 4, 1915, with very indefinite history, was said to have run a splinter into his foot three weeks previously. Two days before admission he complained of great pain in his back and neck, which was stiff; later he could not open his mouth. On examination the day after admission, it was found that his jaw was markedly locked, the abdominal muscles of a boardlike rigidity, and the back slightly arched. He was given 5,000 units of antitoxin in the spinal canal and 10,000 in the vein. The intraspinal dose was repeated two days later. The symptoms increased in severity for a day or two, frequent tonic spasms causing the patient to cry out with pain. After a few days all symptoms began to ameliorate, and he was completely well in about two weeks.

FATAL CASES

Case 17.—O. R., man, aged 34, was admitted to Bellevue Hospital, Nov. 5, 1914, for a lacerated wound of the sole of the foot, which, although treated, became infected with a foul-smelling, purulent discharge. November 12, seven days later, the patient complained of difficulty in swallowing, and the jaws were stiff. He received 1,500 units of antitoxin intramuscularly, and twenty-four hours later, 10,000 units intraspinally and 10,000 intravenously. November 14, the temperature was lower, the jaws less stiff and the general condition improved, when the patient became markedly cyanotic, went into a condition of status epilepticus and died in twenty minutes. No necropsy was held. The exact reason for the sudden death of this patient, when the course of the disease had apparently been arrested, is by no means easy of explanation.

Case 18.—J. O., man, aged 32, admitted to St. Peter's Hospital, Nov. 13, 1914, had stepped on a rusty nail, November 1. Seven days later, his jaw became stiff. This stiffness increased until the time of admission, when his teeth could hardly be separated. The muscles of the back and neck were stiff. November 13, five days after the onset of symptoms, he received 6,000 units of antitoxin intraspinally and 5,000 intramuscularly, the next day, 5,000 intramuscularly and 5,000 intravenously, and on the following day, 5,000 units intravenously and 7,000 intramuscularly. The patient had tonic and clonic convulsions in great numbers throughout the course of his illness. On the day before his death, the tonicity of the neck, jaws and abdomen had greatly diminished. He died following a convulsion, November 17. The short incubation in this case and long delay before beginning treatment are sufficient reasons for the failure of the antitoxin to save this patient's life.

Case 19.—E. C., boy, aged 13 years, admitted to Bellevue Hospital, June 30, 1914, fourteen days previously had fallen and cut his head. Eleven days later he had abdominal pains and vomiting, which were regarded as due to appendicitis. On admission to the hospital he had marked opisthotonos, locked jaws and inability to swallow. A convulsion occurred on the slightest disturbance. He received 10,000 units of antitoxin intraspinally and 10,000 units intramuscularly. The patient's condition grew worse from the time of his admission and he died within twenty-four hours. The disease had evidently progressed too far to be influenced by antitoxin.

Case 20.—W. R., physician, aged 53, was admitted to the French Hospital for herniotomy, which was performed, April 25. May 3, the patient complained that his neck felt stiff; May 4, this symptom was more pronounced and there was some rigidity of the jaw. Toward evening he could not open his mouth fully. He was given about 9,000 units of antitoxin intramuscularly. May 5, he had a general convulsion and became quite cyanotic; this was repeated twice, convulsions lasting about ten minutes. Five thousand units of antitoxin were given intraspinally and 15,000 intravenously. May 6, the patient had four convulsions, one lasting fifteen minutes. Five thousand units of antitoxin were given intraspinally. May 7, there were no further convulsions. The patient was able to take fluids by mouth, and there was much less rigidity. At 8 o'clock in the evening he had a sudden attack of pulmonary edema and rise of temperature. Later there were signs of acute cardiac dilatation. He died on the morning of May 8. This patient was very stout, and had chronic bronchitis and recurring attacks of asthma.

In judging the effect of antitoxin given intraspinally in this series of cases, it must be remembered that the patients were not selected, but that every case of tetanus reported was given the benefit of the treatment regardless of the clinical condition. The series, therefore, may be said to be fairly representative of the type of the disease occurring in and about the city of New York. A few of these patients would undoubtedly have recovered if the intraspinal injection of antitoxin had not been given or, indeed, without any treatment other than symptomatic. The results obtained, however, in the saving of life are so much more favorable than those in previous years, when large doses of antitoxin were recommended to be given by the intravenous and subcutaneous methods, that there can be no reasonable doubt that the low death rate, 20 per cent., here obtained was largely due to intraspinal dosage.

THE USE OF KAOLIN TO REMOVE BACTERIA FROM THE THROAT AND NOSE *

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Kaolin is used in immunologic and other investigations on account of its great adsorptive powers. The idea occurred to us that, on account of this adsorptive power, kaolin might be of use in removing bacteria from the nose and throat, especially in diphtheria carriers. Accordingly, with the cooperation of Dr. George H. Weaver, tests have been made in suitable cases in the Durand Hospital of the Memorial Institute for Infectious Diseases.

We have found that, when properly applied, kaolin in the form of a dry powder removes not only diphtheria bacilli, but also practically all bacteria from the nose in the course of from three to four days. For this purpose the kaolin is blown into the nose six or seven times a day at two-hour intervals by means of a rubber bulb attached to a glass tube, the free end of which tapers a little. The insufflation is repeated several times at each treatment. The success of this treatment appears to depend largely on the free and thorough distribution of kaolin over the nasal surfaces. In cases of more or less obstruction of the nasal passages, the removal of bacteria by kaolin insufflation is more difficult.

In order to secure the most thorough application of kaolin to the mucous membrane of the throat, patients, if old enough, are instructed to swallow as slowly as possible one-third teaspoonful of kaolin four or five times an hour during the day. In the case of adults and older children who are anxious to get rid of diphtheria bacilli, this method, which has been selected after trial of several others, involves no special difficulty. In the case of small children, it is more difficult to apply enough kaolin, and the plan of mixing the kaolin with sugar in the form of tablets is being considered. In a number of cases, in some of which there were a great many diphtheria bacilli in the throat, complete and apparently permanent removal has been accomplished by means of kaolin in the way described in from two to four days, the throat to a large extent being freed from all bacteria.

We have found also that the insufflation of kaolin into the nose in cases of rhinitis in scarlet fever appears to improve the condition rapidly and to remove streptococci and other bacteria quite promptly.

We have not found kaolin to be irritative; when taken into the mouth it gives rise to a feeling of grittiness.

It seems, then, that kaolin, and probably also other substances of a similar nature, may prove of value in removing bacteria from various surfaces of the body by virtue of mechanical adsorption. This may prove of advantage, not only in carriers, but also in conditions of acute infection. Our experience indicates that by means of kaolin, diphtheria bacilli and other bacteria are removed quite easily, especially from the nose.

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SODIUM FLUORID POISONING *

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Several cases of hydrofluoric acid poisoning have been reported.[1] Two well-known chemists were killed by the inhalation of the poisonous fumes of this acid.[2] But so far as we are aware, there is no case of sodium fluorid poisoning on record. The toxicologic effects of the metallic fluorids were studied by Rabuteau,[3] Müller,[4] Tappeiner,[5] Schulz,[6] Hewelke,[7] Siegfried[8] and Schwyzer.[9] Witthaus calls attention to the fact that notwithstanding its toxicity, sodium fluorid is used as a food preservative.

From the pharmacologic experiments it is clear that sodium fluorid is a general protoplasmic poison. It is strongly irritant to mucous membranes and usually produces corrosions. Owing to the fact that the fluorid ion precipitates soluble calcium salts, its toxic effect is similar to that of the oxalate ion. In mammals it causes salivation, gastro-enteritis, dyspnea, convulsions and stoppage of respiration and heart.[10] The fluorids on administration are deposited in the bones, which usually become white and brittle and contain crystals of calcium fluorid. It is well to call attention to the fact that fluorin, in very small traces, is a normal constituent of bone, teeth, milk, eggs, etc.[11]

Intravenous injections of from 0.05 to 0.1 gm. sodium fluorid per kilogram of dog are fatal. A 0.03 per cent. solution of this fluorid will destroy epithelium. A frog will be killed by 0.040 gm. of this salt.

The following is the history of a case of sodium fluorid poisoning:

V. R., girl, aged 19 months, swallowed some of "Peterman's Roach Food" which, according to the label on the box, contains from 40 to 50 per cent. of sodium fluorid. The child immediately began to feel bad and vomited. The child had partaken of food just before she swallowed the poison. The pulse was normal and the temperature normal. A tube was inserted into the stomach of the child and the stomach was washed repeatedly with a solution of lime water and calcium chlorid. About a gallon of lime water and calcium chlorid was used in this operation. It was noticed that there was some bleeding from the gums when the tube was inserted.

The child seemed to feel well after the stomach wash. A specimen of urine collected the following day showed a trace of acetone, but no albumin or casts. A few white blood cells were found. Seventy-two hours later the urine showed albumin, a few granular casts and some red and white blood cells. Fluorin was present in both specimens of urine, which were evaporated and tested according to the method given by Witthaus.

On the third day the temperature rose to 102 F., and the pulse became rapid. Analysis of a catheterized specimen of urine showed no albumin. A few white blood cells and a trace of acetone were present. This specimen did not contain any fluorin. The blood count revealed: hemoglobin,

* From the Biochemical Department of the Pathological and Research Laboratories of the Western Pennsylvania Hospital.

1. King: Tr. Path. Soc., London, 1873, xxiv, 98; Stimson: Brit. Med. Jour., 1899, ii, 1145, 1376.
2. Witthaus: Manual of Toxicology, New York, William Wood & Co., 1911, p. 309.
3. Rabuteau: Thèse de Paris, 1867.
4. Müller: Dissertation, Greifswald, 1889.
5. Tappeiner: Arch. f. exper. Path. u. Pharmakol., 1890, xxvii, 108.
6. Schulz: Arch. f. exper. Path. u. Pharmakol., 1889, xxv, 326.
7. Hewelke: Deutsch. med. Wchnschr., 1890, xxii, 477.
8. Siegfried: Arch. internat. de pharmacod., 1901, ix, 225.
9. Schwyzer: Jour. Med. Research, 1903, x, 301.
10. Sollmann: Text Book of Pharmacology, 1913, p. 573.
11. Jodlbauer: Ztschr. f. Biol., 1901, v, 487.

74 per cent.; red blood cells, 4,000,000; white blood cells, 15,200; polynuclears, 69 per cent.; lymphocytes, 22 per cent.; large mononuclears, 8 per cent.; eosinophils, 1 per cent. Microcytes were present. High colonic irrigation was resorted to, and the patient was given a dose of castor oil. The temperature fell on the following day and the pulse became normal. On the fourth day a specimen of urine was collected. It was acid in reaction, contained a trace of albumin, and gave quite a heavy acetone reaction. Microscopically a few red and white blood cells were present, but no casts. The urine did not reduce Fehling's solution, and did not react positively for diacetic acid. No fluorin could be demonstrated in this specimen. Since that time, examinations of a number of specimens of urine showed no albumin and but a very faint trace of acetone. On the eighth day the child was taken home from the hospital, to all appearances entirely well.

GANGRENOUS APPENDICITIS ON THE LEFT SIDE

A CASE OF VISCERAL TRANSPOSITION

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Gangrenous appendicitis occurring with visceral transposition is so uncommon that it is thought well to report the following case:

A married woman, aged 18, who had had no pregnancies and whose previous history was negative, had irregular menses during the past year. Jan. 30, 1915, she took a course of calomel. Next day she felt well. At 11 p. m. she was awakened by a sudden, severe abdominal pain, of a cramping, colicky nature, in the midabdomen, which continued all night and was accompanied by vomiting. Pain continued all next day, but became localized in the left iliac region and there remained constant with occasional vomiting. She took castor oil and applied hot applications with no relief.

February 2 she was driven to town. The trip took four hours. She vomited once and suffered much. Examination forty hours after onset revealed a medium-sized woman, plainly in severe pain; she leaned to the left side and kept the left thigh flexed. The menses were two days overtime. Temperature was 99½, pulse 120. The abdomen was full and tympanitic. The right side of the abdomen was not tender, and there was little or no muscle spasm. The patient was extremely tender and sensitive over the left side of the abdomen; percussion was almost unbearable; muscle spasm was pronounced. The patient complained of constant pain over the left lower abdomen. Urination and urine were normal.

The uterus was in second degree retroversion, a little large and softer than normal. There was no discoloration of the vaginal membranes. The cervix was soft. Deep palpation of the right adnexal region was not painful. There was some pain in the left adnexal region, and suspicion of a mass felt high up on left side. The breasts were normal.

A diagnosis of probable tubal gestation was made, and operation advised. This was not accepted till next morning, when, owing to increase in pain and fever, and after consultation, operation was accepted and performed fifty-eight hours after onset.

A median incision disclosed the intestines distended and a mass in the left iliac region and no sigmoid found there. The sigmoid was found in the right side and entered the pelvis from that side. The ascending colon and ileum were on the left side, and a gangrenous and perforated appendix lay under the cecum on the pelvic brim. The great omentum surrounded the cecum and appendix and was gangrenous, forming a mass the size of a goose egg. Peritonitis was already present. The appendix, greenish-black and partly liquefied, was removed and drainage inserted. No exploration of the upper abdomen was made, but later by palpation the liver was located on the left side and the apex beat of the heart was in the right fourth interspace. The case, therefore, was one of complete situs transversus. No pregnancy existed. Death occurred fifteen days later from peritonitis.

Special Article

PRACTICAL PHARMACOLOGY *

(*Continued from page 1913*)

XXIII

EVACUANTS—(*Continued*)

3. EVACUANTS ACTING ON THE SMALL AND LARGE INTESTINES

THE MERCURIALS

The insoluble purgative mercurials, including calomel (mild mercurous chlorid), mass of mercury, (blue mass), and mercury with chalk (gray powder), have little action on the stomach unless their passage through it is delayed; their action on the intestine is mildly irritant, increasing peristalsis directly, and possibly increasing the secretion of the intestinal glands, thereby promoting peristalsis indirectly and causing soft stools with little or no pain, or with larger doses causing watery stools with some colic.

Only a small part of the dose of a mercurial is absorbed when evacuation is induced promptly, but when there is interference with the movement of the intestinal contents the mercurials are absorbed. If there is great interference with the passage of the intestinal contents after a large dose of calomel, or other mercurial salt, diuresis is induced. This interference is sometimes secured by administering opium or morphin with small doses of calomel, but if it occurs after large doses toxic symptoms referable to the irritant action of mercury on the kidneys may result.

Other steps should be taken to induce purgation should one of the mercurials fail to act, except when small doses are taken for their diuretic action.

The mercurials were long supposed to increase the secretion of bile, but this error arose from the fact that they protect the bile from decomposition by the intestinal flora, and prevent its absorption by hastening its passage through the intestines, so that it appears in the stools, if the dose be large enough to cause liquid evacuations. The green color of the stools in such cases is sometimes attributed to bile, but it is probably due to the formation of a sulphid of mercury.

There is much uncertainty concerning the reputed antiseptic action of calomel in the intestine. It does not destroy the bacteria in all probability, or greatly inhibit their growth during their stay in the intestine, but great numbers are removed during the purgation. It is a matter of common experience, however, that the condition commonly called "biliousness" (which does not require further description) is often relieved far more effectually even by a merely laxative dose of calomel, than by other evacuants which act as promptly as calomel. On the other hand, many persons find that headaches which are attributed to the products of intestinal putrefaction resulting from bacterial activity, are relieved quite as well by a quickly acting saline purge as by calomel. This does not disprove the claim that calomel has an especial action in the condition mentioned, for obviously, an active cathartic which sweeps out the intestinal contents with a large amount of water in a very short time must remove undigested and putrefying food and enormous numbers of bac-

* This is the twenty-third of a series of articles on useful drugs—on practical pharmacology for the general practitioner. As soon as completed, these articles, elaborated by additional subjects, will be published in book form.

teria, and thus give relief, but stress is laid on the fact that a mildly acting dose of calomel or other mercurial, which causes only a soft, not liquid stool, gives decided relief from certain forms of headaches which are not relieved by vegetable laxatives.

Calomel often fails to relieve the diarrhea of infants which is caused by bacterial activity, but this does not prove that calomel is not bactericidal. The hypersecretion of mucus in such conditions affords excellent opportunities for the multiplication of bacteria after the calomel has passed through the intestine, and it is not feasible to keep the entire intestinal canal supplied with the drug, since so much would have to be used that systemic poisoning would ensue.[1]

Calomel is more useful in preventing the development of the more severe symptoms when taken in time, than in curing them after full development.

Mercury with chalk is less irritating than calomel; the chalk is said to interfere with peristalsis sometimes.

Calomel has little action on the uterus and is therefore not contraindicated in pregnancy. The action of blue mass is much like that of mercury and chalk.

THERAPEUTICS

The therapeutic indications for the use of the mercurial purgatives is sufficiently indicated in the discussion of their actions. Calomel, blue mass or mercury with chalk may be used when there is need for a mild laxative, or in somewhat larger doses when a cathartic is required. Headache due to intestinal putrefaction, the condition called "biliousness," putrefactive diarrhea, and in fact any condition attended with intestinal putrefaction, may serve as an indication for one of the mercurial purgatives unless there is a specific contraindication for their use.

DOSAGE

Calomel was used formerly in enormous doses for a variety of conditions and salivation was a common result, but with a more rational and more limited use of calomel this condition is now rare.

As a result of the reaction following the use of such large doses of calomel physicians went almost to an opposite extreme, and minute, but frequently repeated doses came into favor. If one desires to use such small doses from 3 to 5 mg. ($\frac{1}{20}$ to $\frac{1}{10}$ grain) may be given every fifteen minutes until ten doses are taken. This method of administration sometimes induces nausea without any apparent advantage in the action, but it is possible that it secures a more prolonged, or more frequently repeated, antiseptic action in the intestine.

A dose of from 30 to 60 mg. ($\frac{1}{2}$ to 1 grain) will often act as a laxative after from eight to twelve hours, but it is preferable to give a saline laxative about four to six hours after administering the calomel unless purgation has taken place. Doses of from 0.15 to 0.30 gm. ($2\frac{1}{2}$ to 5 grains) of calomel induce severe purgation with copious watery stools attended with severe griping and a considerable degree of nausea, but such doses have little advantage over smaller doses followed by a saline purgative which causes an equally active purgation with much less discomfort.

From 8 to 15 mg. ($\frac{1}{8}$ to $\frac{1}{4}$ grain) of calomel given to a child at the beginning of an attack of diarrhea, and followed by doses of 5 mg. ($\frac{1}{10}$ grain) twice a day for several days, will often avert more serious symptoms.

It is probable that doses of calomel larger than 0.12 gm. (2 grains) are never required for an adult; should this fail to cause purgation dependence should be placed on other evacuants, particularly the salines.

Sodium bicarbonate is commonly added to calomel under the mistaken idea that it is necessary to combine an alkali with the mercurous salt to prevent its conversion into a mercuric salt by the gastric juice. The amount of sodium bicarbonate usually employed is wholly inadequate to neutralize more than a small part of the gastric juice in the stomach, and no such change takes place when calomel is subjected to the action of the gastric juice without neutralization.

Mass of mercury or mercury with chalk may be given in doses of 0.25 gm. (4 grains).*

SALINE EVACUANTS

When a concentrated solution of one of the slightly diffusable salts is taken into the stomach it becomes diluted with the gastric secretion, or, if the stomach was previously empty, it withdraws fluid from the cells of the stomach, causing irritation, with nausea and vomiting at times.

The rate at which this dilution in the stomach occurs in the absence of a sufficient amount of fluid previously present, will depend to a considerable degree on the relative amount of fluid in the blood and tissues. If they contain an abundance of water, secretion will be active as a rule, and when the solution of the salt has become fairly dilute it will pass into the intestine, but if the blood and tissues contain relatively little water gastric secretion is slow and nausea and vomiting may result. This is best illustrated by the protocols of two laboratory experiments (hitherto unpublished).

Two dogs, A. and B., received an equal amount of sodium sulphate. Dog A. received the salt in concentrated solution after having been deprived of water for twenty-four hours, and vomited within about five minutes; he even refused water owing to nausea, but when enough water was passed through a tube into his stomach to dilute the salt somewhat, he drank water almost immediately. Dog B. was given the same amount of salt in dilute solution after having had the usual allowance of water; he showed no signs of nausea, and ate food at once (showing absence of nausea).

When a solution of salt has passed into the intestine it retains its water of solution until its concentration has been so reduced as to be approximately equal to that of the blood, the distention of the intestine by the fluid causing peristalsis, the action being exerted in the small and large intestine.

The salts of this group are not absolutely nonabsorbable, and when peristalsis is prevented by any means the solutions may be absorbed into the circulation completely. If the absorption takes place, as it always does to some slight extent, the salt is excreted by the kidney, and it may induce diuresis if the absorption has been sufficiently rapid, for the renal epithelium, in marked contrast to that of the intestine, is readily permeable to most of these salts.

Occasionally, large doses of magnesium sulphate have been absorbed in pathologic conditions of the bowel more rapidly than they could be eliminated by the kidney, and have given rise to symptoms of poisoning, and in a few instances death has resulted, but this accident is not to be feared except when obstruction of the intestine exists, and, of course, no purgative should be given in such conditions.

1. For a discussion of the subject of intestinal antisepsis see Harris, Norman M.: Intestinal Antisepsis, THE JOURNAL A. M. A., Oct. 12, 1912, p. 1344.

* Owing to lack of space the materia medica of this group is omitted from THE JOURNAL. It will be included when this series is published in book form.

When magnesium sulphate (Epsom salt) is absorbed rapidly, or is injected intravenously, in sufficient amounts, it depresses the nervous system and induces complete narcosis with muscular relaxation. The depressant action following the subcutaneous injection is now being utilized in the treatment of the chronic form of tetanus with reported success. The absorption from the intestine is probably too slow in any case to induce serious poisoning unless the kidneys are diseased or marked depression of the central nervous system previously exists. The other purgative salts are devoid of toxic actions after absorption. Magnesium citrate should be open to the same objection as the sulphate, but no cases of poisoning have been reported after its use, so far as we are aware.

The precise mechanism of the purgation induced by these salts is not understood fully, but there is no reason to doubt that their action results largely from their capacity for retaining water and thus distending the bowel. This also explains why concentrated solutions require so much longer time than dilute before causing purgation, and twenty hours may elapse before their effect is induced, whereas dilute solutions are commonly effective within three hours.

The purgative salts have a disagreeably bitter taste, and not infrequently concentrated solutions are taken in order to lessen the time required to drink them; when they are taken in this way a glass of water should be taken immediately to dilute them in the stomach, unless the removal of an excess of water from the tissues is the object in view, in which case concentrated solutions are usually employed.

It is probable that moderately dilute solutions would be more serviceable in such cases than the concentrated ones commonly used. The amount of fluid which can be removed by purgation is very much greater than that required for the moderate dilution of the salt, and the absence of gastric disturbance and the much more rapid effect of the dilute solutions suggest that they might be employed even in dropsical conditions.

Magnesium sulphate is partly converted into carbonate in the intestine, and the liberated sulphuric acid combines with the alkalies which are absorbed and excreted in the urine; thus depriving the body of them. This becomes a matter of importance when the salt is administered continuously for some time, and it is customary in such cases to administer sodium bicarbonate to make up the deficiency. This loss of alkali does not occur with the use of sodium sulphate or the other purgative salts.

The administration of the sulphates (Epsom salt or sodium sulphate) is followed by the formation of some hydrogen sulphid in the small intestine, and this may give rise to some discomfort, with rumbling.

The insoluble magnesium carbonate and the oxid, or calcined magnesia, are partly converted in the stomach into the soluble chlorid, and in the small intestine partly into the soluble bicarbonate. Should they fail to undergo the change they do not cause purgation, and an accumulation of the insoluble carbonate may occur after large doses and cause intestinal obstruction.

Magnesium oxid has an advantage over the carbonate in that it does not yield carbon dioxid gas when neutralized in the stomach. The oxid and carbonate have the advantage over the soluble salts of this group, being tasteless, and requiring a less bulky dose.

Potassium citrate and bitartrate are absorbed somewhat more rapidly than the other purgative salts, so that small doses induce diuresis without purgation, while large doses cause both, but at best they are only mild laxatives, rarely giving rise to watery stools, but they are active diuretics.

Sodium chlorid or the ordinary table salt in proper dilution is also useful as a laxative and may at times advantageously replace other objectionably bitter salines. The dose, about an even teaspoonful (from 4 to 5 gm. or about 60 grains), should be dissolved in half a liter (1 pint) or more of water and taken on an empty stomach.

Various acid fruits are mildly laxative, partly because of the citric and malic acids which form citrates and malates in the intestine, and partly because of their cellulose, pectin and sugars which are in part indigestible and absorb liquid, thus increasing the bulk of the intestinal contents in much the same way that the purgative salts do.

THERAPEUTIC USES

The uses of the saline laxatives are indicated largely in the discussion of their actions. They are useful when for any reason a rapid evacuation of the bowels is indicated, as in poisoning by slowly absorbable substances which cannot be removed from the stomach; to remove bacteria and fermenting masses of food; to remove dropsical effusions, and in simple constipation.

They have an especial usefulness in that they do not cause irritation when used in dilute solutions.

This would be an appropriate place to discuss the use of purgative mineral waters were it not for the fact that there is no obvious advantage in their use. There can be little doubt that the extraordinary reputation enjoyed by many of these waters depends on the success attained in the treatment of patients at the springs, where special attention is given to all the habits of life, and where only the most pleasant conditions obtain. There is no satisfactory evidence that the ordinary purgative mineral waters have any important action not possessed by a simple solution of the same salts made artificially, and, in fact, many of the mineral purgative waters are more or less artificial, since some are mixtures of waters from different springs while others consist of evaporated spring water, and during the process of evaporation changes occur in the salts present.

One especial advantage which natural mineral waters have over the solutions of purgative salts as they are too often taken is that they are very dilute, and the patient is thus required to take a fairly large amount of water with them. This advantage can be secured so easily, however, by attention to the proper dilution of purgative salts that it is not sufficient to justify the expense of the natural waters.

Magnesium sulphate is largely used in obesity because the magnesium ion combines in part in the intestine with fatty acids which are thus prevented from being absorbed. The tasteless magnesium oxid and carbonate are often used as laxatives in children, especially when it is desired to neutralize the hyperacidity of the stomach.

The normal sodium phosphate is alkaline in reaction and when it is desired to increase the acidity of the urine the acid phosphate, NaH_2PO_4, is to be preferred, or the official di-sodium phosphate may be used adding about three times as much dilute phosphoric acid to it.

A concentrated solution of magnesium sulphate is used as a local application in inflammatory conditions.

DOSAGE

The amount of the several salines required to accomplish a given purpose depends largely on accompanying factors, such as the degree of dilution and the susceptibility of the individual, which vary considerably.

Epsom salt or magnesium sulphate, the effervescent preparation of this substance and sodium sulphate, or Glauber's salt, are usually given in doses of 16 gm. (240 grains) or more, dissolved in from one-half to a full tumbler of cold water. Potassium and sodium tartrate, or Rochelle salt, is given in doses of 8 gm. (120 grains). Sodium chlorid, or ordinary "table salt," and sodium phosphate are given in doses of approximately 4 gm. (60 grains), well diluted with water. The effervescent preparation of sodium phosphate is usually given in double the dose of the simple salt or about 8 gm. (120 grains).

Magnesium oxid—heavy or light—is given in doses of 2 gm. (30 grains) and the carbonate in somewhat larger amounts, 3 gm. (or 45 grains). Because of the fact that these two substances are insoluble in water they must be administered in the form of mixtures with water or in the case of the heavy magnesium oxid the dry powder can be placed on the tongue and washed down with cold water.

The solution of magnesium citrate is usually dispensed in bottles sufficient for one dose which is drunk as an effervescing draught. Potassium bitartrate, one of the more agreeable of the salines because of its acid taste, is given in doses of 2 gm. (30 grains) mixed with water. Potassium citrate may be given in about the same dose 2 gm. (30 grains) and the effervescent preparation in double this dose—4 gm. (60 grains).

The administration of the salines is somewhat simplified in that their action is enhanced by the presence of water and that, whether water-soluble or not, they are preferably given with copious draughts of water.

ALKALOIDAL EVACUANTS

Physostigmin

It is apparent from the discussion of the physiology of the gastro-intestinal movements that any drug which stimulates the parasympathetic nerves (vagus and erigens) will cause intestinal peristalsis, or contraction of the muscles of the intestinal walls.

We have a number of agents which stimulate the endings of these nerves, or which increase their excitability to the normal stimuli which reach them through the blood, but these drugs have other actions which usually overshadow their actions on the intestine and prevent their use as evacuants.

Pilocarpin and physostigmin stimulate the vagus and erigens, and induce active movements, not only in the intestine but also in the stomach and uterus. Physostigmin probably acts directly on the smooth muscle of the intestine rendering it hyperexcitable to normal stimuli, and thereby promoting peristalsis. Large doses cause tonic ring-like contractions of the intestine and interfere with the passage of the contents.

Large doses of physostigmin cause violent uterine contractions which may be tonic in character.

There seems to be little reason for the use of any of the pharmaceutic preparations of physostigma, since they contain eseridin and calabarin in variable amounts in addition to physostigmin. Eseridin resembles physostigmin in its physiologic actions, but it is weaker, and calabarin has a strychnin-like action.

Physostigmin sulphate is hygroscopic and the solution decomposes rapidly with the formation of a ruby-red substance known as red resin. The salicylate is soluble in about 150 parts of water. It is somewhat more stable than the sulphate in solution but it also undergoes the same decomposition.

THERAPEUTIC USES

The actions of physostigmin on the intestine are usually overshadowed by its effects on the central nervous system, and it is far from satisfactory as an evacuant, its use as such appearing to depend rather on a forlorn hope in the search for a dependable purgative after abdominal operations. The use in man has been encouraged perhaps by the observation that it is a very much more valuable purgative for the herbivora.

The indication for which physostigmin is used as a purgative is atony of the intestine. It should not be used in the presence of inflammation of the intestine or when there is mechanical obstruction. The local and systemic actions of physostigmin are counteracted by atropin in doses of 1 mg. ($\frac{1}{60}$ grain), which may be repeated once or twice if necessary.

DOSAGE

Physostigmin salicylate is used as an evacuant in doses of 1 mg. ($\frac{1}{60}$ grain) and doses of even 2 mg. ($\frac{1}{30}$ grain) are sometimes given, but Sollmann states that such doses are somewhat dangerous, this being especially true in the presence of depression of the central nervous system.

Atropin; Strychnin

Atropin and strychnin are never used alone as evacuants, but both of them are added to other substances which induce purgation, and atropin is used to relieve spasm of the intestine which interferes with the passage of the intestinal contents.

Small doses of atropin are said to stimulate Auerbach's plexus, while large doses depress it, and all doses which have any effect depress the parasympathetic (vagus and erigens) endings in the intestine. This is of benefit when overstimulation causes tonic contraction instead of normal peristaltic waves.

There is a possible disadvantage in the long-continued use of even very small doses of atropin which is generally overlooked or disregarded, but which is worth considering. Atropin depresses the vagus endings in all of the organs which it supplies, and even small doses tend to abolish those parts of the gastric, pancreatic and biliary secretions which are under nervous control. It is certain that the minute amount of atropin ($\frac{1}{10}$ mg.—$\frac{1}{650}$ grain) commonly used with aloin in laxative pills has no very pronounced action on these secretions when a single dose is taken, but, on the other hand, we have no knowledge of the effects of its long-continued use, and in the absence of definite advantages it would be better to omit it when laxative pills are to be taken for prolonged periods.

Strychnin is used in doses of 1 mg. ($\frac{1}{60}$ grain), which are correspondingly larger than those of atropin, and it seems to be useful through its stimulation of Auerbach's plexus.

Extremely small doses of nicotin stimulate, large doses paralyze, the ganglia of the enteric system, and it is a matter of common observation that smoking often promotes peristalsis. Nicotin is not used therapeutically, however, for this purpose.

(To be continued)

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SATURDAY, JUNE 12, 1915

A TEST OF PHYSICAL FITNESS

The conservation of national vitality has become a popular theme in this country. It is a part of a still greater problem which is designated as national efficiency. The old fatalistic belief in the inevitable occurrence of ill health and early death in certain instances has given way to the rapidly growing conviction that premature death and disease are for the most part avoidable and that it is within the power of man to rid himself of many of the enemies to comfort and good health. The aim of hygiene is to approximate, with respect to health, the ideal of a life free from illness and disability of every kind.

In this effort to bring about a maximum fitness of mankind, many agencies are being brought into play. Our physical environment is being subjected to closer scrutiny; and by means of private and public regulation, a protection is frequently rendered to mankind in ways more important than that provided by the work of police or fire departments. The abatement of nuisances, inspection systems, regulation of labor and trades — these are a few reminders of the vigorous attempts at the conservation of health through public hygiene. To this may be added the improvement of the social environment and the effects of what has been called semipublic hygiene, that is, the disciplines relating to institutions and the medical profession. The diffusion of knowledge regarding the laws of health and its control, the care of individuals who are for some reason unfitted to adjust themselves to the needs of the day, along with numerous other potential agencies for bringing about health, are illustrative of the prophylactic tendencies of the times. It is being found that "philanthropy and profit are not always antagonistic." Finally, public hygiene is receiving the support of personal hygiene, without which it must remain ineffective. Here nutrition, fresh air, exercise and rest, sports, and the combat with the social diseases find their place. Some one has well remarked that the present world-wide interest in personal hygiene and physical education is not due to any startling discoveries, but to the rediscovery of the importance of truths long insisted on by the medical profession. The knowledge of the value of fresh air and good food is old. It is the application which is new.

A healthy organism calls into play almost innumerable functions, both physical and mental. How to measure the efficiency with which they are carried out and the fitness of the individual to undertake or endure them has become a problem of the day. Mental capacity has been investigated by a variety of standards, some of which have gradually become widely accepted. As an instance of how the quantity and quality of intellectual product per unit of time can be studied, we may refer to such psychologic tests as the naming of colors, cancellation, addition, mental multiplication, typewriting, grading of various performances, and exercises in English composition. The ability to accomplish set tasks of this sort varies with environmental as well as personal and hereditary conditions. The physical working capacity of the individual can likewise be measured by a variety of apparatus designed to test muscular strength.

The fitness of man involves something more than the ability to do sums or lift dumb-bells. The propaganda for health and increased vitality obviously calls for some added mode of measuring the results of supposed benefits and menaces, long-continued activities, such as physical training, gymnastics, play, athletics and good ventilation on the one hand, and fatigue-producing activities on the other. The record of the incidence of disease, the school record, the blood count, etc., are not a sufficient criterion. Among the added tests which are intended to show the beneficial or depressive effect of various conditions supposed to affect health is the "blood ptosis test."[1] This has been designed by Dr. C. Ward Crampton of the Bureau of Educational Hygiene in the New York City Department of Education to measure a function easily wearied and damaged by unhygienic influences. It is based on the fact that the vasomotor control of the splanchnic area in man experiences a change of adjustment when the body is moved from the horizontal to the upright standing position. According to Crampton, the efficiency of this control is measured by placing the subject in a horizontal position and taking the systolic pressure in the brachial artery. The subject is then required to stand, and without removal of the cuff, the blood pressure is taken in a vertical position. In a perfectly strong and vigorous subject the splanchnic vasotone will increase and the blood pressure will be found raised about 10 millimeters of mercury. In an individual weakened by dissipation, overwork, lack of sleep, or by the incidence of disease, the blood pressure will tend not to rise but to fall. It was found that in the vigorous subjects the heart rate did not increase on standing, and in the wearied subjects it increases as much as forty-four beats per minute. It was further found that

1. Crampton, C. W.: The Blood Ptosis Test and Its Use in Experimental Work in Hygiene, Proc. Soc. Exper. Biol. and Med., 1915, xii, 119.

this difference varied with the blood-pressure differences and in some cases took the place of the blood-pressure variation. In other words, the same subject under the same conditions would show a weakness sometimes by a decrease in blood pressure, and at other times by an increase in heart rate, and vice versa. After further observation, it was determined that a decrease of 1 millimeter of mercury had a value of an increase in heart rate of approximately two.

By taking into account both of these features and adjusting the changes in heart rate into terms of corresponding blood-pressure variations, Crampton has devised a percentage scale of vasomotor tone ratings which have been put to the test by numerous observers. Experience already shows that the measurement of the changes in the performance of the heart and the vasomotor system in different postures may reveal damages before subjective or objective symptoms are apparent. For example, the New York State Commission on Ventilation has recently reported that a very high room temperature, such as 86 F., with 80 per cent. relative humidity, produces a marked fall in the Crampton value of subjects.[2] The use of fans afforded some improvement. The new test obviously does not measure numerous important features, such as the structural condition of the heart; yet it seems likely to have considerable value in furnishing added data for the estimation of what we may, for the want of a better term, call physical fitness.

KAOLIN IN THE TREATMENT OF BACTERIA CARRIERS

Aluminum silicate, kaolinum, fuller's earth and bolus alba are various names under which the essentially same substance is familiar to physicians. In 1906, Stumpf of Wurzburg published a detailed report of his experience with it in cholera under the title "A Reliable Method of Treating Asiatic Cholera and Severe Infectious Cholera Morbus, and the Importance of Bolus Alba (Kaolin) in the Treatment of Certain Bacterial Infections." His attention was early attracted to the possible disinfecting virtues of clay by his observation that cadavers exhumed after being buried in clay soil were always in a remarkable state of preservation in comparison with those in other soil. At that time his experience with the kaolin covered eight years. He believed that it owed its efficiency in bacterial infections to its action in depriving the bacteria of a suitable culture medium while mechanically burying them alive, separating them from the mucosa and other tissues by a protecting, comparatively impermeable coating. He applied it as a remedy to extensive septic wounds, putrid leg ulcers and the like. Stumpf experimented on himself to determine the harmlessness of the finely pulverized kaolin taken internally in large amounts, and found that it was well tolerated. He administered it in cases of cholera, and found that colics and tendency to vomit were at once arrested. The dose given was 125 gm. of the most finely pulverized kaolin poured on top of half a tumbler of water. After the powder sank to the bottom of the glass, it was thoroughly stirred in with a spoon, and the whole amount taken at once or within a few minutes. After an interval of three hours, the same dose was repeated. Infants were given proportionately smaller doses.

More recently, kaolin has been given as a gastric astringent; it has been much used in the treatment of cholera and dysentery, and its harmlessness has suggested its use as a substitute for bismuth in taking Roentgen-ray pictures of the gastro-intestinal tract when bismuth cannot be tolerated. In the present European war, the physicians in the German and Austrian armies are using large amounts of kaolin to combat dysentery and cholera, and according to Stumpf,[1] the microscopic findings in the feces of the patients treated fully warrant its use. Wolff-Eisner,[2] from his experience in the war, believes that kaolin has been triumphant in the treatment of cholera. He tabulates twenty-five cases, showing almost immediate stopping of diarrhea in dysentery and typhoid after a dose of a double spoonful each of kaolin and charcoal had been taken from one to three times a day. In severer cases, the proportion of kaolin was doubled. He regards the kaolin-charcoal treatment as a kind of immunotherapy, basing his belief on Hofmeister's dictum that all the phenomena of immunity are colloid chemical reactions. He believes that the kaolin binds toxins which are beyond the reach of serotherapy. The method was applied to healthy carriers and was apparently successful, as no bacilli could be found in the stools after the treatment was administered.

Von Willuki,[3] encouraged by the use of kaolin in the treatment of cholera and dysentery by the methods advised by Stumpf, has used it in two cases of paratyphoid bacteria carriers. In both cases, following treatment with bolus alba, the organisms quickly disappeared from the stools.

Of special interest, therefore, is the note elsewhere in this issue[4] by Hektoen and Rappaport. By insufflating kaolin powder in the nose, they are able to remove the diphtheria organism as well as streptococci from the nasal mucous membranes. The swallowing of the powder is followed apparently by a rapid disappearance of the diphtheria organism from the throat. These results are significant.

2. Some Results of the First Year's Work of the New York State Commission on Ventilation, Am. Jour. Pub. Health, 1915, v, 101.

1. Stumpf, J.: Bolus Alba in Diarrhea, Dysentery and Cholera, München. med. Wchnschr., 1914, lxi, No. 40.

2. Wolff-Eisner: Kaolin Charcoal Treatment of Diarrheic Processes, Therap. d. Gengenw., 1915, xvii, 92.

3. Von Willuki: Bolus Alba in Paratyphoid, München. med. Wchnschr., 1914, lxi, 2356.

4. Hektoen, L., and Rappaport, B.: The Use of Kaolin to Remove Bacteria from the Nose and Throat, THE JOURNAL A. M. A., this issue, p. 1985.

THE COMPOSITION OF DIARRHEAL STOOLS

A diarrheal stool is an obvious symptom of some disturbance in the functions of the organism. How serious or significant the diarrhea may be usually depends on a number of attending circumstances. One can easily postulate a variety of conditions, each of which might lead to a copious or abnormal evacuation of the bowel, yet be of quite unlike moment to the organism in which they occur. A nervous reaction may thus lead to an accelerated peristalsis and result in an increased defecation without further import; the presence of toxic micro-organisms in the intestine may provoke undue secretion followed by abundant evacuations and loss of body constituents which would ordinarily be retained or reabsorbed; abnormal digestive functions with attendant putrefaction and fermentation may produce a diarrhea with the enforced loss of what would be nutrient products under normal alimentary conditions.

It seems almost unbelievable that so little is known respecting the relation of the chemical composition of abnormal stools to the general nutritive welfare of the individual. The feces are frequently the objects of careful scrutiny macroscopically and microscopically with the object of discovering some offensive invader of the alimentary canal or some harmful foreign substance. Professor Holt and his collaborators[1] at the Babies' Hospital and the Rockefeller Institute in New York have lately called attention to the paucity of data regarding the diarrheal stools of infants in comparison with those which were normal.

Superficially, one might assume that very loose stools differ from normal ones only in that they contain more water. The new investigations[1] show how far from correct such a haphazard generalization may be. Not only do diarrheal stools contain a large amount of water, but also the quantity of dry matter lost daily is much greater than that lost in stools of normal consistency. The fats in particular vary in most cases directly with the amount of water leaving by the bowel. Thus, on an average, the loss of fatty matter in the normal feces of infants at the Babies' Hospital was 12 per cent.; in the loose stools it reached 40 per cent. The nitrogenous substance also may reach an amount equal to two and a half times that lost in normal stools. A considerable amount of it is presumably not derived from the food, but represents portions drained away from the body in the intestinal secretions. This is attended by a withdrawal of inorganic salts from the body under conditions in which it might never be suspected but for the evidence secured by chemical analysis.

There are further facts which point to suggestions in the direction of dietotherapy. An equivalent of over 80 per cent. of the intake of salts in the diet may disappear with diarrheal feces. This may include, in individual cases, much of the calcium and all of the magnesium of the diet. Chlorin, potassium and sodium are rarely found in the stools of the healthy; in diarrheas they make their appearance. Holt and his co-workers have recorded negative balances for some of these elements, that is, losses from the body itself.

These facts are not entirely new in the domain of clinical chemistry; but they deserve emphasis here because practitioners too often fail to take them into account in their treatment. It is, as the New York pediatrists point out, not only water, but some of the inorganic salts that need to be replaced when an infant has been depleted by a severe and prolonged diarrheal attack.

1. Holt, L. E.; Courtney, Angelia M., and Fales, Helen L.: The Chemical Composition of Diarrheal as Compared with Normal Stools in Infants, Am. Jour. Dis. Child., March, 1915, p. 213.

RECENT METHODS FOR THE TREATMENT OF SEWAGE BY "ACTIVATED SLUDGE"

Experiments on an entirely new method of sewage treatment have been made during the past year in England, and are being continued in both England and the United States. The new process is known as the "activated sludge process" of sewage oxidation and sedimentation. Its significance may be made clear by a brief description of a typical sewage treatment plant making use of most of the advances in the art prior to the advent of the activated sludge experiments.

The city of Baltimore has constructed and is now operating in part one of the largest sewage treatment plants in the United States. Roughly, this plant includes about 6 acres of preliminary sedimentation tanks, varying from 13 to 25 feet deep; 30 acres of coarse stone sprinkling filters, about 8½ feet deep, and about 3 acres of final sedimentation tanks. The preliminary sedimentation tanks remove most of the settleable solids from the sewage, the sprinkling filters partially oxidize the remaining organic constituents of the preliminary tank effluent, and the final sedimentation tanks remove most of the oxidized settleable solids from the sprinkling filter effluent. In a general way, the object sought in the new activated sludge experiments is to do in a single set of tanks that which is now being accomplished by the sequence of preliminary tanks, oxidation filters and final tanks. The realization of this object would mean that proposed new sewage treatment plants could eliminate the sprinkling filters and the final tanks. It would also mean that existing plants could greatly increase their present capacity for future population at a relatively low increase in cost.

The English experiments on activated sludge, and some of the proposed American investigations have been outlined in a recent publication.[1] In Manchester,

1. Engineering Record, 1915, lxxi, 288, 521.

England, in 1913, partly at the suggestion of Dr. Gilbert J. Fowler, and partly on their own initiative, Messrs. Edward Ardern and W. T. Lockett began the series of experiments from which the new process has evolved. They found that in order to nitrify completely an average sample of Manchester sewage, it was necessary to apply continuous aeration for five weeks. Experiences similar to this had caused many investigators in the past to give up the idea of tank aeration as being much beyond the economic limit. Ardern and Lockett, however, decanting the supernatant and retaining the oxidized sludge, added a further sample of crude sewage, and continued aerating. Nitrification of this second portion occurred in a much shorter period of time. Encouraged by this discovery, the experimenters continued the accumulation of larger amounts of oxidized sludge, and finally became convinced that the presence of such accumulation of sludge deposit "had the property of enormously increasing the purification effected by the simple aeration of sewage."

Some later experiments with a cask of 50 gallons' capacity showed that by four hours' aeration the free ammonia in Manchester sewage could be reduced from 34.6 parts per million to 2.1 parts per million, and the nitrates, expressed as NH_3, increased from 0 to 16 parts per million. Subsequently, Melling and Duckworth made similar tests on a much larger outdoor scale and secured with three hours' aeration a reduction of free ammonia from 28.6 parts per million to 0.1 part per million, and an increase in nitrates + nitrites, expressed as N, from 1 part per million to 11.1 parts per million. These results are significant. Certainly the nitrification produced is ample to assure a thoroughly stable effluent.

This work, however, has all been on what is known as the "fill and draw" method of tank treatment, and the fill and draw method, as applied to the activated sludge process, consumes a large amount of hydraulic head, produces a low operation efficiency because it is an intermittent process and also necessitates periods of nonoxidation which possibly reduce the efficiency of the activated sludge. The importance, therefore, of translating the activated sludge process from the fill and draw to the continuous flow method, and of bringing the cost of operation, by this and other improvements, into the region of workable values, is obvious.

The "continuous flow" problem is the one on which attention seems to be most sharply focused at present in the current English and American experiments. In the United States, the Public Health Service is conducting, jointly with the Baltimore Sewerage Commission, experiments involving primarily a continuous flow type of tank. It is understood, also, that the Milwaukee Sewerage Commission is devoting some effort in this direction. The most important result which will be determined by these experiments is, of course, the matter of annual cost per unit of population or per unit of sewage flow. This item will eventually decide whether the activated sludge process is to replace or to eliminate oxidation filters from the modern sewage treatment plant.

The problem of the treatment of sewage of growing communities, especially of those cities located on water courses used as a source of water supply, is one of vital importance to the public health. The great decrease in the cost of construction under the new system is so large that it is quite possible that without an increase in cost over the old methods, it may be found feasible by disinfection methods to render safe the final effluent for discharge into water courses.

WILLIAM WITHERING AND DIGITALIS

In a recent appreciation of the work of William Withering, Cushny[1] describes the way in which Withering introduced the scientific use of digitalis to the medical profession. In 1741, Withering was born in Shropshire, England; in 1762 he entered the University of Edinburgh, and graduated in 1766. He began practice at once in Stafford, became attracted to botany, and in 1776 published a "British Botany." In 1778 he published an article on scarlatina anginosa, and in 1785 a book which Cushny believes entitles Withering to lasting fame. The book is entitled "An Account of the Fox Glove and Some of Its Medical Uses; with Practical Remarks on Dropsy and Other Diseases." Previous to this period, digitalis is occasionally mentioned in medical literature, for example, as an external application in scrofula, and internally in phthisis. Since the time of publication of Withering's book, its action in dropsy and on the heart has been generally recognized.

Withering states that his attention was drawn to digitalis in 1775 by its use as an ingredient of a complex cure for dropsy. He accordingly prescribed it in his dispensary, at first as a decoction of the leaves, later as an infusion, and on some occasions as a powder. The doses prescribed were large, but they proved a sovereign remedy in the cases of dropsy which he reports. Its use quickly spread.

After ten years' trial of this new remedy, Withering published an account of his work. "The deliberation with which the discovery was brought before the world," according to Cushny, "gives a delightful impression of the easy life of the eighteenth century. Now we find a new remedy exploited after an experience of months," he says, "sometimes only of weeks. Perhaps a return to the old and more cautious method is too much to wish for, but I doubt if therapeutics would suffer from it."

1. Cushny, A. R.: William Withering, M.D., F.R.S., Proc. Royal Soc. Med., 1915, viii, p. 85 of section on history of medicine.

Withering's book contains reports of 163 cases, in which he had prescribed the remedy himself, and a number of others in which his friends had used it at his suggestion. He used digitalis only as a diuretic, but seemed to realize that it acted on the heart, for he affirms that "it has power over the motion of the heart to a degree yet unobserved in any medicine, and that its power may be converted to salutary ends."

Withering began to have threatenings of pulmonary tuberculosis about 1780. In 1792 he tried the effect of a warm climate, spending the winter at Lisbon. He was not favorably impressed, however, with this place as a resort for tuberculosis. He states very strongly that "phthisis is infectious." Later he remained at his home during the winters, where he kept his library at a constant temperature of 65 F. by means of flues; the windows were double sashed, and every movement was avoided as far as possible. "This treatment," says Cushny, "is an interesting contrast to the open-air method of today." Osler, discussing these points, believes that the treatment was likely "not inappropriate for a patient in the third stage of tuberculosis."

Withering died in 1799, and was buried in the old church at his home at Edgbaston, which contains a monument inscribed with his name and encircled with Witheringia, and with the purple foxglove, the plants of which he wrote. He was a man of many interests: a chemist, a botanist and an antiquarian, but above all, a physician.

THE NATURE OF BACTERIA—AN EARLY AMERICAN VIEW

For many years in the earlier history of bacteriology the micro-organisms which are its subject-matter were claimed for both the animal and vegetable kingdoms by the workers in the different domains of science. To Ehrenberg,[1] the pioneer student of bacteria, who knew little else to do with them except to classify them, they were animalcules, "devoid of an intestine and without external organs." The power of movement with which many of these minute forms were endowed placed them outside of the possibility of a plant nature to the early observers. It was the more careful study of the lower fungi that first drew attention to the similarity between bacteria and these plant forms.

The current accounts of the development of our knowledge of the bacteria state that, with the possible exception of Dujardin, all observers up to 1852 had looked on bacteria as belonging to the animal kingdom. In that year Perty announced that of these minute organisms, some belong to the animal and some to the vegetable kingdom, while a certain number appeared to him to stand on the borderland between the two. It was, above all, the eminent botanist Ferdinand Cohn who, in 1854, insisted on the plant nature of these micro-organisms. He remarked that the individuals grow and divide like plant cells; that they agree with these in structure, and particularly in the manner of fruit-forming; and that they pass through a series of intermediate steps into a higher class — that of the colorless algae. The studies of Naegeli as early as 1857 pointed in the same direction. In 1859 Davaine[2] also suggested the vegetal nature of the vibrio.

It has lately been asserted[3] that priority in the matter of identifying micro-organisms as plant forms really belongs to a well-known American biologist, Joseph Leidy, who is today remembered in particular for his notable contributions to the science of paleontology. In a paper which he presented to the Philadelphia Academy of Natural Sciences in October, 1849, Leidy remarks how, on considering that the conditions essential to vegetable growth are the same as those indispensable to animal life, he felt convinced that entophyta would be found in healthy living animals as well as, and probably as frequently as entozoa. Then follows the description of "two species of vibrio" detected by him in the alimentary tract of animals. "Even these moving filamentary bodies belonging to the genus Vibrio," says Leidy, "are of the character of algous vegetation. Their movement is no objection to that opinion, for much higher confervae, as the Oscillatorias, are endowed with inherent power of movement, not very unlike that of the vibrio."

Wherever the borderline between animal and plant forms may be placed in the future, these pioneer observations and the conclusions of Leidy respecting the place of what we now regard as bacteria among the diverse groups of living things deserve to be recognized and placed on record.

1. Ehrenberg: Die Infusionsthierchen als volkommene Organismen, Leipzig, 1833.

2. Davaine: Compt. rend. Acad. d. sc., 1859, p. 58; also Traité des Entozoaires, Paris, 1860.

3. Leidy, Jr., J.: Morphology of the Bacteria (Vibrio and Spirillum), and Early Research, Science, 1914, xl, 302.

Current Comment

THE BRITISH MEDICAL ASSOCIATION WINS

The case of Stevens *vs.* the British Medical Association has been decided finally in favor of the Association. As will be remembered,[4] C. H. Stevens put on the market under various names ("Sacco," "Stevens' Consumption Cure," "Lungsava") a fraudulently exploited "consumption cure" containing a hypothetic African herb "umckaloabo." The British Medical Association, in its work of giving the public facts regarding fraudulently exploited nostrums, exposed Stevens' preparation and charged him with being a swindler and a quack who had foisted on the public a worthless remedy. This was in 1909. Stevens brought action for libel against the British Medical Association, which defended its observations on the claim that they were fair comment on a matter

4. The Journal A. M. A., Sept. 3, 1910; April 5, 1913, and Sept. 12, 1914.

of public interest. At the first hearing of the case in 1912, the jury failed to agree; at the second hearing in 1914, the jury declared that the words were not libelous, that the comments were fair and it returned a verdict in favor of the British Medical Association. Stevens appealed the case and the appeal was heard on May 5, 6, and 7, 1915, with the result that Stevens lost. In his appeal, Stevens attempted to make much of the personal attack on him by the British Medical Association, but one of the judges before whom the appeal was taken, pointed out that "a comment may be fair, although it contains a personal attack." The rule as to fair comment in such cases, it was pointed out by the judge, had been clearly stated in the classic case of Dakhyl *vs.* Labouchere:

> "A personal attack may form part of a fair comment upon given facts truly stated, if it be warranted by those facts. . . ."

The judge further pointed out that the courts had made it plain that "the defendant may go very far in imputing motives." One other of the three judges before whom the appeal was heard, stated that whatever was in Stevens' medicine the evidence indicated that it was, to all intents and purposes, valueless. The judge concluded that it was most important "that the right to comment should be freely exercised in cases such as this, where large sums were made out of proprietary medicines." In view of the fact that the investigations by the British Medical Association have been upheld by the courts and the fraudulence and general worthlessness of Stevens' nostrum have become a matter of record the following item that appeared in an Albany (N. Y.) paper last October is of interest:

> "'To acquire the secret process for manufacturing a remedy for tuberculosis and other diseases, discovered by Charles H. Stevens of London,' the Umckaloabo Chemical Company of New York City was incorporated with the secretary of state yesterday. The capital of the concern is $250,000. The incorporators are Samuel S. Ryckman, Edward A. Sprong and Irene V. Russell, all of New York City."

EARLY HISTORY OF TYPHUS FEVER AND PEDICULOSIS

A recent paper by Dr. Fischer[1] of Vienna gives the early history of typhus in relation to the "lice plague," now so formidable in eastern Europe. The routine history of typhus, its description by Fracastorius (1533) and as "tabardillo" by Francesco Bravo (1570), the superb account of Pringle (1752), the attempts to differentiate it from typhoid by Willis (1643), Huxham (1737), Hildenbrand (1810) and others, the final and classical differentiation by W. W. Gerhard in America (1837) and Sir William Jenner in England (1849), and the subsequent developments up to the time of Plotz are well known. Dr. Fischer lists the many curious names given to the disease during the sixteenth, seventeenth and eighteenth centuries — febris petechialis, febris maligna, febris hungarica, lues hungarica, lues pannonica, morbus castrensis and others — and states that the first description of pediculosis as a concomitant of typhus was given in a series of observations on Hungarian camp diseases, published by Tobias Cober[2] of Görlitz in 1606, and reissued by the anatomist Meibom in 1685. Under the category "languor pannonicus," Cober describes a group of syndromes which he regards as prodromes of typhus, but which, Fischer thinks, have nothing to do with the disease. Lice, however, Cober signalizes as a constant plague of camps, not to be prevented by careful change of clothing, as he testifies from personal experience, and producing marked psychic unrest which, with such other etiologic factors as an unhealthy climate and atmosphere, impure drinking water and irregular mode of life, might easily bring about the languor pannonicus and even the "Hungarian disease" or typhus. In his chapter "De languore pannonica, ex variis animi pathematis," Cober sets forth that mental excitement furnishes the soil for the seed, and that war itself, with its experiences of camping on the hard ground, enduring extremes of heat and cold, torrents of rain and swarms of insects, is particularly liable to bring about such excitation of spirit. Among the insect pests of war time he specifies "culices" or mosquitoes and "pediculi." A translation of his quaint description of the latter nuisance follows:

> With these foregather the most terrible pediculi, hardly to be thought of without a sense of discomfort, which in themselves, through their constant promenading and sucking of the body, are enough to stir up one's bile. For it is impossible to avoid the bites of these miserable creatures, especially in the first years in the field, as they enjoy a sort of right of citizenship in all camps. The atmosphere is so lukewarm, mild and stuffy that when clothes which have been washed in swamp water are exposed to the sunlight, they are seen to swarm with these "vermibus Syllanis." One cannot hope therefore to get away from these constant attendants and companions, as they seem to arise from the very moisture of the body itself. At first I thought to rid myself of the pest by constant change of newly washed clothing, but even this seemed to bring them more and more into play, instead of destroying them. And this phthiriasis, which even the Egyptian magi of old could not produce, but which in these localities every one can create in his own person, can, as I bear witness, drive a man into fury. For as often as I was bitten by these miserable, abject animalcules, I gave full rein to my anger, fairly gnashing my teeth with rage, and cannot even now think of them without vexation. . . . One cannot ward off these armed six-footed Turks even with iron and steel. . . . And among many soldiers I have noted the frightful spectacle that this fearful plague of lice had gone far enough to cover the whole nape with ulcers, the flesh not only excoriated to the breadth of one or two fingers, but actually excavated, the men condemned to this miserable fate dying with groans and lamentations.

SKULL FRACTURES AND "DRUNKS"

The ordinary "drunk," found on the street in a comatose condition, is thrown into a patrol wagon, allowed to achieve sobriety on the hard planks of a "lockup" bed, and usually gets but little pity on his appearance before the police court judge. The victim of a not too evident skull fracture who is found semiconscious and refused admission to several hospitals because of a hasty diagnosis of alcoholism, often — to use a well-known bull — wakes up dead in his police

1. Fischer, I.: Wien. klin. Wchnschr., 1915, xxviii, 321.

2. Cober: Observationum castrensium et Ungaricum decas I-II, Frankfurt, 1606, reprinted at Helmstadt, 1685.

cell in the morning. The small town or village where the "town drunkard" forms an object lesson to all the growing youngsters is, of course, little concerned with this problem. In large cities where from two to ten such cases may occur in a single day the problem is an important one. In Chicago recently, a woman was struck by a street car, and taken at once to a local hospital. The receiving physician, acting on the hospital's rule against alcoholics, refused her admission because there was evidence that she had been drinking. The patient was then carried several miles to a police cell and a day later, following the appearance of severe symptoms, to a police hospital, in which she died. The postmortem showed the presence of a skull fracture. The coroner's jury which considered the case recommended the installation of an observation ward in the hospital where physicians might carefully examine, with roentgenography and other methods, all cases of the character described. The need of such facilities is obvious from a simple relation of the facts in this single case. Such an observation ward should not be considered a refinement of science but an absolute necessity for the saving of lives.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST; SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

CALIFORNIA

Personal.—Dr. Francis H. Mead, health officer of San Diego for eight years, has resigned, and has been succeeded by Dr. A. E. Banks, assistant health officer.——Dr. Hilo S. Musante, chairman of the public health board of the Civic League of Improvement Clubs of San Francisco, has resigned.

Hospital Notes.—A building is to be erected on Castelar Street, Los Angeles, by the Parent-Teacher Association for use as a free clinic for public school children.——The contract for the first three buildings of the new State Hospital at Norwalk has been awarded to a San Francisco firm for $115,000. The buildings to be erected are a two-story structure, 200 by 60 feet, for general hospital purposes; a one and one-half story building, 260 by 50 feet for both kitchen and dormitory purposes, and a one-story power house, 110 by 60 feet.——The McNutt Hospital, San Francisco, has been acquired by a syndicate of San Francisco physicians and has been renamed the Fairmont Hospital.

New Appointments on Faculty.—The following appointments to the faculty of the University of California have recently been announced: I. C. Hall, formerly connected with the Cutter Laboratories, assistant professor of bacteriology. ——Dr. George W. Corner of Johns Hopkins University, assistant professor of anatomy.——Dr. Ruby Cunningham, instructor in hygiene and an infirmary physician in the infirmary of the University.——Dr. Abel W. Johnson, instructor in laryngology, otology and rhinology; Dr. Olga Louise Bridgman, Berkeley, instructor in pediatrics and mental abnormalities of childhood and Drs. Alfred E. Meyers, Howard E. Ruggles and Vivia Belle Appleton, instructors in pediatrics.

Research Associateship in Pathology Endowed.—In memory of Dr. Edith J. Claypole, Research Associate in the Department of Pathology of the University of California, who died on March 26, 1915, friends of the University have offered an annual gift of $1,200 to maintain the position of Research Associate in Pathology in the University of California, and have made definite provision for an endowment sufficient to yield this income in perpetuity. The immediate purpose of the position is to be a continuance of investigations in which much valuable work had already been accomplished by Dr. Claypole, in collaboration with Dr. Frederick P. Gay, Berkeley, Professor of Pathology in the University of California, in regard to improved methods for immunization against typhoid and methods for the treatment of that disease.

FLORIDA

Laboratory Building Finished.—The new laboratory of the State Board of Health at Pensacola, erected at a cost of $20,000, is now completed and ready for work.

Health Activities.—A vigorous campaign for a better milk ordinance is now being carried on in Pensacola.——The fight against the fly and mosquito is also in active progress.

Personal.—Dr. Fritz A. Brink, bacteriologist of the State Board of Health laboratory, Pensacola, is taking a vacation in South Dakota.——Dr. James R. Bean, Jacksonville, of the Jacksonville laboratory will take Dr. Brink's place until he returns.

Hospital Notes.—A building for tuberculosis patients has been completed at the Miami County farm. The building is 40 feet square and has been erected at a cost of $1,050.——Rapid progress is being made on the construction of the Pensacola Hospital, which when completed, will cost $400,000. It is expected that it will be ready for occupancy in September.——Articles of incorporation have been filed for the De Land Sanatorium by Frank R. Osborne and others. The institution is to have a capital stock of $50,000. Its object is to maintain a sanatorium in or near De Land and it has stated specifically that it is a corporation not for profit.—— The State School for the Deaf and Blind is to have a hospital building to cost $10,000, which appropriation was made by the last legislature.——A plea for a new modern city hospital for Miami was made to the city council by Dr. John L. North, city physician. About $16,000 is at present available for this purpose, but $30,000 is required for the construction of the building.——Contracts have been let to a Tampa firm for the erection of the West Coast Hospital, Clearwater.

ILLINOIS

Hospital Incorporated.—The Evangelical Hospital and Deaconess Association of Southern Illinois which has charge of the Henrietta Hospital, East St. Louis, filed incorporation papers May 24.

Victory in House for University.—On June 2, the House of Representatives passed a bill appropriating $5,000,000 for the University of Illinois, a portion of which, about $100,000 will it is said, be utilized for the purchase of ground for the medical school and hospital of the university.

Highland Park Leper Returns to Italy.—Angelo Lunardi, the Highland Park leper whose name has been so prominently before the public for several months, is said to have been secretly deported to his home in Italy. He was taken to New York by his friends and put aboard a steamer for Italy which sailed June 3.

Chicago

Summer Hospital Will Soon Open.—The *Tribune* Summer Hospital for the Convalescent at Algonquin, with accommodations for from six to seven hundred sick women and their babies, will be opened for the season June 21.

Physicians Club Election.—At the annual meeting of the Physicians Club at Chicago, held June 3, the following directors were elected: Drs. Henry T. Byford, Joseph Zeisler, and Charles P. Caldwell; and Dr. Arthur M. Corwin was elected secretary.

Northwestern Alumni Election.—At the annual meeting of the Alumni Association of Northwestern University Medical School, held June 7, the following officers were elected: president, Dr. William R. Cubbins, '00; secretary, Dr. Arthur B. Eustace, '07 (reelected); treasurer, Dr. Leo G. Dwan, '07 (reelected); and necrologist and Alumni editor, Dr. Samuel C. Stanton, '92. At the alumni banquet that followed the meeting, Dr. Archibald Church presided as toastmaster and the speaker of the evening was Prof. E. R. Keedy who delivered an address on "Medico-Legal Criminal Borderland."

To Fight Rabies.—At a meeting called by Alderman Willis O. Nance, chairman of the Council Committee on Health, June 4, plans were discussed for the limitation of rabies which has increased so materially in the city of late. At the conference were present the health commissioner, chief of police, superintendent of the dog pound, coroner, a rep-

resentative of the Chicago Kennel Club, Aldermen Hugo Krause and Oliver B. Watson, and Drs. James A. Clark, Frederick A. Fisher, James E. Stubbs and William A. Evans. It was suggested that an all the year muzzling law would prove effective, but no definite action was taken.

Chicago Unit for War Service Ready.—The Chicago unit leaves by the New York Central line from La Salle Street Station, Sunday, June 13, at 11:30 p. m. The unit will sail on the steamship *New Amsterdam* of the Holland American Line, Tuesday, June 15, at noon, from Hoboken, N. J., and land at Falmouth, England. The purpose of the organization is to take charge of a base hospital of 1,040 beds in England or field work on the continent. The personnel of the unit is as follows: Drs. James M. Neff, Operating Surgeon, Spokane, Wash.; Geo. G. Davis, Operating Surgeon, Chicago; W. E. Leighton, Operating Surgeon, St. Louis; Philip S. Chancellor, Medical Consultant, Chicago; Geo. P. Gill, Associate Surgeon, Rockford, Ill.; W. R. Rainey, Associate Surgeon, Salem, Ill.; Waldo Richardson, Associate Surgeon, Seattle; Ralph L. Thompson, Pathologist, St. Louis; Edward M. Auer, Neurologist, Skillman, N. J.; Geo. E. Meyer, Oral Surgeon, Chicago; Chas. Maghy, Ophthalmologist, Chicago; W. Earl Ball, Roentgenologist, Chicago; Scurry Terrell, Ear, Nose and Throat Surgeon, Dallas, Tex.; J. F. Archibald, Associate Pathologist, St. Louis; John G. O'Malley, Chicago, Surgeon and Secretary; D. F. Hayes, Chicago; R. B. Haven, Chicago; R. B. Acker, Chicago; P. M. Dale, Chicago; S. Walker, Chicago; E. L. Cavanee, Chicago; E. Lee, Seattle; R. D. Long, Oklahoma City; C. D. McLean, Oklahoma City; C. Smith, Kalispell, Mont.; W. G. Uppendahl, Peoria, Ill.; J. S. Fox, Silverton, Colo.; J. J. Hilton, Chicago; C. R. Stanley, Indianapolis; J. R. Taylor, Madison, Wis.; A. H. Hixson, Columbus, Ohio; Fred Moeller, Chicago; Fred S. Jacobs, Chicago.

Dr. James Neff and Dr. Chancellor sailed June 2, on the steamship *Rotterdam* to make preliminary arrangements.

Seventy nurses, most of them graduates of local training schools, will also serve with this unit.

INDIANA

Tuberculosis Survey to Be Made.—Surg. James C. Perry, U. S. P. H. S., arrived in Richmond, May 27, to conduct a tuberculosis survey in the city.

Health Officers Oppose Alcohol.—At the annual conference of the health officers of the state, held at Indianapolis, May 12, about 200 health officers were in attendance, and Dr. George W. Bence, Greencastle, was chairman. A resolution was unanimously adopted declaring that physicians and health officers should join in the campaign against alcohol.

Personal.—Dr. L. Oilar, Indianapolis, has been commissioned as first lieutenant, M. C., Ind. N. G.——Dr. Gustavus B. Jackson has been elected president of the Indianapolis City Board of Health, succeeding Dr. T. B. Victor Keene, membership expired.——Dr. Eugene B. Mumford has been appointed a member of the Indianapolis Board of Health. ——Dr. Boston H. B. Grayson, Huntington, who recently underwent an operation for appendicitis in the Huntington County Hospital, has returned home convalescent.——Dr. Norman F. Peacock, Darlington, is reported to be suffering from septicemia.——Dr. Clint C. Sourwine, Brazil, who has been seriously ill with septicemia, is reported to be improving.

Prosecution of Chiropractors.—The State Board of Medical Examiners has been taking up the question of the chiropractors. At Crawfordsville, Montgomery County, William A. Summerville, after being convicted once of practicing medicine without a license, attempted it again, but on being again indicted, left before he could be arrested. William N. Tyson, a masseur, at first employed under the direction of the physicians of Crawfordsville, it is said began soliciting and treating patients on his own account, using chiropractic methods. He was indicted, tried, and on May 27 fined $25 and costs in the circuit court of Montgomery County for practicing medicine without a license. He paid the fine and agreed not to repeat the offense. Mrs. Ellen Cunningham and Paul F. Myers, chiropractors, the latter a recent "graduate" of the Palmer School at Davenport, Iowa, were also charged at Crawfordsville with practicing medicine without being authorized to do so. Mrs. Cunningham is defended by Attorneys Morris & Hartwell of La Crosse, Wis., a firm frequently employed to defend chiropractors in various states, it is said, in the interest of certain chiropractic schools. A motion to quash the charges in the case of Mrs. Cunningham reveals the general grounds on which the chiropractors seek to defeat the provisions of the medical practice acts where chiropractors are haled into court for illegally practicing medicine. It is declared that the court has no jurisdiction; that the Indiana practice act is not in accord with the national Constitution; that it impairs the obligation of contracts and violates the constitutional provision that all shall have equal rights in the several states; that a speedy trial is not provided for; that the law is arbitrary and attempts to give exclusive rights to some, and to show how knowledge of medicine or surgery shall be obtained, is class legislation, has been enacted for private gain, attempts to settle questions of science, declares that practice of medicine and surgery which is not such practice, and imposes unnecessary restrictions and is not a proper exercise of the police powers of the state. It is also declared that the law violates the constitution of Indiana, and that the charge against Mrs. Cunningham embraces two offenses while only one is specified in the title. The case was to have come to trial the last week in May, but a continuance was asked by the defendant. The case of Myers has not yet been reached.

IOWA

Eastern Surgeons Visit Iowa.—Dr. George W. Crile, Cleveland, delivered an address before a joint meeting of the Scott County and the Rock Island County (Ill.) medical societies in Davenport, June 8.——Dr. George L. de Schweinitz, Philadelphia, was the guest of honor at a luncheon in Iowa City, May 13, which was given by eye, ear, nose and throat specialists of the city.

Tuberculosis Sanatoriums.—At a meeting of the Pottawattamie County Medical Society held in Council Bluffs recently, formal endorsement was given to the proposed sanatorium for the treatment of tuberculosis and the proposition of a tent colony near McClelland was favored.——The Woodward County Board of Supervisors has contracted for the erection of a modern tuberculosis hospital in Sawyers Bluff, Sioux City, at a cost of from $12,000 to $15,000.

Kepford Resigns.—Aretas E. Kepford, for nine years state lecturer on tuberculosis, has resigned to take effect July 1, and will enter evangelistic work. During Mr. Kepford's nine years of service he has seen a decrease in the mortality from tuberculosis in the state of almost 40 per cent., has traveled several thousand miles and has delivered more than 2,000 lectures to more than half a million people, and by his efforts has greatly assisted in the establishment of the State Sanatorium, Oakdale.

Personal.—Dr. William H. Newlon, Fort Madison, has started for the Pacific Coast.——Dr. Otto J. Yelt, Colfax, sailed from New York, June 1, for service with the French army.——Dr. Albert Anderson, Estherville, was operated on, May 13, for appendicitis and cholelithiasis, and is reported to be doing well.——Dr. Floyd S. Clarke, Lemars, has moved to New York City.——It is announced that Dr. Max W. Emmert will leave Atlantic City, N. J., some time this month and will locate in Des Moines.

State Society Meeting.—The sixty-fourth annual meeting of the Iowa State Medical Society was held in Waterloo, May 12 to 14, under the presidency of Dr. Henry C. Eschbach, Albia, and the following officers were elected: president-elect, Dr. John F. Harrick, Ottumwa; president, Dr. William B. Small, Waterloo; vice presidents, Drs. John E. Luckey, Vinton, and Harvey B. Gratiot, Dubuque; secretary, Dr. James W. Osborn, Des Moines (reelected); treasurer, Dr. Thomas F. Duhigg, Des Moines; councilors, first district, Dr. John R. Walker, Fort Madison, and eleventh district, Dr. Giles C. Moorehead, Idagrove; delegate to the American Medical Association, Dr. John C. Rockafellow, Des Moines; and alternate, Dr. Frank M. Tombaugh, Burlington. Davenport was selected as the place of meeting for 1916.

KENTUCKY

Hospital News.—The Clark County Fiscal Court on May 12 agreed to give $5,000 toward the proposed hospital at Winchester provided that a subscription of $25,000 is secured. ——The city council of Henderson has passed an ordinance appropriating $25,000 for the establishment of a hospital in that city.

Personal.—Dr. J. Morrison Ray has been appointed a member of the board of trustees of the Louisville Public Library, succeeding Dr. Chester A. Mayer, deceased.——Dr. R. Julian Estill, Lexington, who has been seriously ill at the Good Samaritan Hospital in that city for six weeks, is reported to be convalescent.——Dr. U. V. Williams, Frankfort, has been reappointed a member of the state tuberculosis commission.——Dr. Leon L. Solomon has been elected dean; Dr. Frank W. Fleischaker, vice dean, and Dr. Siegel C. Frankel, secretary, of the staff of the Jewish Hospital, Louisville.——Dr. Frank Fithian, Paris, is reported to be seriously ill with rheumatism in Martinsville, Ind.——Dr. W. Hamilton Lond, Louisville, has been elected president of the Interstate Association of Anesthetists.——Dr. Thomas L. Harris has succeeded Dr. James Cruce as chief resident physician at the Louisville City Hospital.——Dr. Simeon K. Fisher, Milton, is reported to be seriously ill with heart disease.

MARYLAND

Public Meeting on Cancer.—As a part of the nation-wide movement against cancer, the Baltimore City Medical Society, acting jointly with the committee on public instruction of the Medical and Chirurgical Faculty of Maryland, held an interesting meeting in Osler Hall on June 4. The speakers were Dr. Jonathan M. Wainright, Philadelphia, who is chairman of the cancer committee of the Pennsylvania State Medical Society; Dr. Julius Friedenwald, Baltimore, who spoke on "What Everyone Should Know About Cancer of the Stomach," and Dr. Fred V. Beitler, Halethorp, of the State Board of Health. Dr. William H. Welch, Baltimore, presided at the meeting.

Personal.—Dr. Burns S. Chaffee, Baltimore, will become resident physician of the Union Protestant Infirmary, succeeding Dr. Edwin G. Davis, Baltimore, when changes in the hospital staff take place this summer. Dr. Davis will remain as a member of the staff. Dr. Chaffee has been connected with the institution for several years.——Interns W. S. Bean, Jr., and W. Y. Hollingsworth, interns in the United States Marine Hospital, Baltimore, have resigned and have been succeeded by Drs. M. V. Ziegler and Harry Schmuck.——Dr. William Lee Smith, Riderwood, is under treatment in Johns Hopkins Hospital, Baltimore.——Prof. Thomas L. Patterson of the University of Maryland Medical School has accepted the position of assistant professor of physiology in the medical faculty of Queen's University, Kingston, Ont. ——Dr. A. Clarence Smink, Baltimore, sustained injuries of the head in a collision between the automobile in which he was riding and a street car, May 29.——Dr. Thomas S. Cullen, Baltimore, who was operated on for appendicitis and cholecystitis, May 29, is reported to be making satisfactory progress.——Dr. Alfred Whitehead, Baltimore, is under treatment in Johns Hopkins Hospital.

Medical Schools Merge.—A plan to merge the University of Maryland Medical School and the College of Physicians and Surgeons, which has been under way for months, has been consummated. The merger applies only to the work of the first two years. The third and fourth year classes will continue to be taught separately by the two respective faculties. The combined school will receive from the regents of the Maryland State University $15,000 for each of the years 1915 and 1916. An act of the legislature, which created the Maryland State University, gave that institution the sum named to be used for medical education in the state. Neither of the schools now receives state aid. The University of Maryland regents will be increased to include eight men as representatives of the College of Physicians and Surgeons; and the medical faculty of the university will be increased by ten from the physicians and surgeons, making twenty-one in all. There will be no resignations. The University of Maryland Medical School was established in 1807 and the College of Physicians and Surgeons in 1872. Dr. Arthur M. Shipley is dean of the former and Dr. William F. Lockwood is dean of the latter institution. The University of Maryland Medical School occupies the oldest medical building in the United States, now being actively used in medical teaching.

MICHIGAN

Holmes Guest of Honor.—Dr. Arthur D. Holmes, Detroit, past president of the Wayne County Medical Society, to whose activities were largely due the success of the enterprise of securing permanent quarters for the society, was the guest of honor at a testimonial dinner given by members of the organization, May 21, at which Dr. Wadsworth Warren, Detroit, officiated as toastmaster.

Clinic Week at Medical College.—The annual clinic week in Detroit College of Medicine and Surgery began May 26. The program of this week has already appeared in THE JOURNAL, and it remains only to say that the week was a notable success.——At the annual meeting of the Alumni Association held on the steamer *Tashmoo*, June 2, Dr. Alexander W. Blain, Detroit, was elected president; Dr. Frederick W. Robbins, Detroit, honorary president, and Dr. Charles W. Husband was reelected secretary-treasurer.

Personal.—Dr. Arthur O. Ullrey, Niles, was operated on at the Epworth Hospital, May 9, and is said to be doing well. ——Dr. William J. Rynearson, Parshallville, was seriously injured, May 31, when a runaway horse collided with the automobile in which Dr. Rynearson was riding.——Dr. A. A. Spoor, Big Rapids, has been appointed assistant state bacteriologist, with headquarters at the new laboratory which the State Board of Health has decided to open at Houghton. ——Dr. Louis Barth, Grand Rapids, has started on a trip to the Pacific Coast.——Dr. Felix J. Pzbylowski has won his suit against the poor commission for $1,033.33, and the judge has ordered that Dr. Pzbylowski be restored to office as city physician of Detroit.——Dr. John C. Brown, Battle Creek, has been appointed a member of the State Pardon Board, vice Dr. Karl B. Brucker, Lansing.——Dr. and Mrs. John H. Kellogg, Battle Creek, returned May 20, from a tour to the Pacific Coast.——Dr. Arthur D. Bangham, Albion, underwent an operation in Battle Creek, May 20, for the enucleation of the right eye.——Dr. Ralph G. Cook has resigned as chief of the Kalamazoo Antituberculosis Society, and is succeeded by Dr. R. Genung Leland, East Le Roy.—— Dr. Ralph C. Apted, city physician of Grand Rapids, who was operated on for disease of the liver at Butterworth Hospital, May 8, is reported to be improving. Dr. Allison H. Edwards is in temporary charge of Dr. Apted's work.——Dr. Thomas J. Henry, city physician of Detroit, has recovered from the effects of an accidental dose of carbolic acid.——Dr. John T. Cooper has been appointed local surgeon for the Pere Marquette Railroad Company at Muskegon, to succeed Dr. Albertus B. Poppen.

MINNESOTA

Summer Course at University.—A course for practitioners will be given by the University of Minnesota medical department, during the entire month of July. The full summer session of the medical school will begin June 14 and end July 23. The clinics in the City Hospital, Minneapolis, will be open to graduate students and practicing physicians.

Health Survey Planned.—Dr. H. M. Bracken, secretary of the State Board of Health, announces that the board will designate one county in the state in which a thorough health survey will be conducted. Beginning on July 1, a detachment of officials from the United States Public Health Service will enter the county designated, examine every householder and make a detailed report of the sanitary condition of the premises and the occupants.

Tribute to Pioneer Surgeon.—A life-sized bronze statue of the late Dr. W. W. Mayo, presented by the people of Rochester and Olmsted County, was unveiled in Mayo Park, Rochester, May 29. Rt. Rev. Thomas O'Gorman, Sioux Falls, S. D., and former Chief Justice Charles M. Stark, two of Dr. Mayo's most intimate friends, delivered addresses during the ceremonies. On the base of the statue are carved the words:

William Worrel Mayo,
Born May 31, 1819, Died March 6, 1911.
Pioneer Physician Citizen.
A Man of Hope and Forwardlooking Mind.

Time-Limit Quarantine for Diphtheria.—The director of the division of preventive diseases of the State Board of Health has issued a circular to health officers and physicians which states that owing to the closing of the State Board of Health laboratories, May 15, a time-limit quarantine for diphtheria supersedes control by the culture method until August 1, when laboratories will resume work. Quarantine must be continued for at least three weeks after the disappearance of all clinical symptoms of diphtheria.——To facilitate the distribution of free diphtheria antitoxin, throughout the state, the secretary of the State Board of Health has designated 122 stations at which the indigent may obtain free antitoxin. The attending physician in each case must determine whether the patient is entitled to the benefit of this provision.

Personal.—Dr. Charles H. Mayo has been appointed a member of the Board of Education of Rochester.——Dr. Christian Johnson, Wilmar, who underwent operation recently in St. Paul, is making satisfactory progress toward recovery.——Dr. Thomas M. Joyce, Janesville, is reported to be ill in St. Joseph's Hospital, Mankato.——Mr. L. P. Wolf, a consulting engineer of St. Paul, has been appointed a member and consulting engineer of the State Board of Health, succeeding Dr. Charles Lyman Greene, St. Paul, resigned.——Dr. Michael Sullivan, Adrian, was operated on for hernia at Luverne Hospital, recently, and is said to be doing well.——Dr. Rudolph A. Beise has been elected mayor of Brainerd.——At the fifty-seventh birthday exercises of the state of Minnesota, held in the Old Capitol Building, St. Paul, May 11, Dr. John M. Armstrong gave a review of the lives of pioneer physicians of Minnesota.

Public Health Association Meeting.—At the annual meeting of the Minnesota Public Health Association held May 18, the following officers were elected: Governor W. S. Hammond and President George E. Vincent, honorary vice presidents; James T. Jerould, Minneapolis, vice president; Dr. W. L. Beebe, St. Cloud, secretary; Dr. Paul B. Cook, St. Paul, treasurer; Drs. Paul B. Cook, St. Paul; Halvor Holte, Crookston; and Messrs. W. A. Laidlaw, St. Paul; H. L. Merrill, Hutchinson; C. C. Stillman, St. Paul, and Mrs. A. L. Robinson, Warren, directors. The executive secretary, Dr. H. W. Hill, was granted leave of absence for seven months and at the adjourning annual meeting, May 24, Dr. Ignatius J. Murphy, Duluth, was unanimously elected secretary to act in Dr. Hill's absence, and has already entered on his duties. The association proposes a stirring public health campaign to arouse interest and secure for the next legislature advances in public health work which were refused by the last legislature. County public health associations are to be formed and an active campaign for membership is to be inaugurated.

NEW YORK

Long Island Hospital for the Insane.—Governor Whitman has signed the legislative appropriation permitting the State Hospital Commission to enter into contracts for additional quarters for patients at the Long Island State Hospital to the amount of $400,000, of which $200,000 is available at once.

Buffalo Alumni Assemble.—The fortieth annual meeting of the Alumni Association of the Medical Department of the University of Buffalo was held at that institution June 1 to 4, and the following officers were elected: president, Dr. Lesser Kaufman, '04, Buffalo; secretary, Dr. Julius Richter, '04, Buffalo, (reelected); treasurer, Dr. Frank E. Brundage, '09, Buffalo; and trustee, the retiring president, Dr. George F. Cott, '84, Buffalo. The annual alumni dinner was held on the evening of June 3, Dr. Thomas H. McKee, '98, officiating as toastmaster.

New York City

Raising Requirements for Health Inspectors.—Dr. Sigismund S. Goldwater, commissioner of health, has announced that in the future all applicants for the position of medical inspector, to which physicians only are eligible, must show at least one year of hospital experience as an intern in addition to the medical course.

Crocker Research Fund.—The trustees of Columbia University have appointed the following board of managers of the George Crocker Cancer Research Fund: Drs. T. Matlack Cheesman, and Walter Mendelson, President N. M. Butler, Dean Samuel W. Lambert, and Profs. Warfield T. Longcope, William G. MacCallum, and Francis Carter Wood.

Geriatrists Organize.—The New York Geriatric Society was organized June 2, its object being the scientific study of senile conditions, the cause of aging, the diseases of advanced life and the home and institutional care of the aged. The following officers were elected: president, Dr. Robert Abrahams; vice-president, Dr. Edward P. Swift and secretary, Dr. Ignatz L. Nascher.

Supreme Court Sustains Muzzling Law.—The Appellate Division of the Supreme Court, on March 29, 1915, unanimously sustained the validity of that section of the Sanitary Code which prohibits any unmuzzled dog on any highway or in any public park or place in the city of New York. This finally disposes of the "Knoblauch" case and upholds Justice Lehman of the Supreme Court in his opinion that the ordinance is a valid and reasonable exercise of the police power of the Board of Health.

Systematic Inspection of Farm-Killed Meat.—After a number of conferences between the department of health and the board of aldermen it was decided to inaugurate a system of inspection of farm-killed meat, to be performed by veterinarians qualified in postmortem examinations, the cost to be met by the firms selling the goods. An ordinance on these lines was drafted and sent to the board of aldermen, and was passed by that body on May 11.

Columbia's Plan Announced.—More definite plans for the new medical plant in connection with Columbia University were announced June 1. The total cost of the project will be $16,700,000 of which the share of the Presbyterian Hospital will be $9,200,000. The plans include a hospital designed to contain 650 beds and seventy-five private rooms. Provision will be made for the permanent location of the George Crocker Cancer Research Foundation, and the Vanderbilt Clinic will be rebuilt as a part of the new hospital. The plans also include a students' dormitory which will accommodate 400 students. At present the College of Physicians and Surgeons has a deficiency of about $150,000 a year. The urgently needed department of sanitation will require an additional $40,000 per year and it is pointed out that the usefulness of the medical school along many lines is hampered by lack of funds. The university must raise a total fund of $7,500,000 in order to carry out its plans.

Personal.—Dr. Matthias Nicoll, Jr., has been appointed assistant director of laboratories of the Department of Health at a salary of $3,000 per year.——Dr. Abraham L. Wolbarst was the guest of honor at a dinner given May 12, by physicians who had attended his Thursday night genito-urinary clinics at the West Side German Dispensary and Hospital during the winter. Dr. Simon C. Grudberg acted as toastmaster.——Dr. Alfred Stillman, II, sailed for Europe June 5, for duty as surgeon in Mrs. Henry Payne Whitney's Hospital in France.——Dr. William V. Pascual, Brooklyn, was operated on for appendicitis May 25, and is said to be doing well.——Dr. Lucius F. Herz was struck by an automobile in New Haven May 22, and sustained a fracture of the left leg above the knee in addition to numerous cuts and bruises. ——Dr. Simon Flexner, director of medical research of the Rockefeller Institute, was given the honorary degree of LL.D. by the University of Maryland, Baltimore, May 21.

PENNSYLVANIA

Gift to Hospital.—The Benjamin A. Haywood memorial dispensary and pathological laboratories, presented to the Sibly Memorial Hospital, Washington, by Mrs. Elizabeth E. Haywood of Sheran as a memorial to her husband, were formally dedicated, May 18. The laboratories are thoroughly equipped and the dispensary will be opened for free patients daily.

Philadelphia

Woman's Medical College Commencement.—The fortieth annual commencement exercises of the Woman's Medical College of Pennsylvania, Philadelphia, were held at the college, June 2. Dr. Richard C. Cabot, professor of medicine in Harvard Medical School, delivered the doctorate address.

College Commencements.—The thirty-fifth annual commencement of the Medico-Chirurgical College of Philadelphia was held at the Academy of Music, June 4. Mr. Clinton Rodgers Woodruff delivered the address to the graduates. ——The ninetieth annual commencement of Jefferson Medical College was held June 5 at the Academy of Music. There were 145 graduates. The annual address to the students was delivered by Dr. Victor C. Vaughan, Ann Arbor, Mich. His subject was "The Doctor's Ideals." The degree of LL.D. was conferred on Dr. Vaughan by the president of the board of trustees.

Alumnae Election.—The election of officers of the Alumnae Association of the Woman's Medical College of Pennsylvania, June 3, resulted as follows: president, Dr. Elizabeth L. Peck; director, Dr. Catherine Macfarlane; recording secretary, Dr. Jacobina S. Reddie; corresponding secretary, Dr. Mary Buchanan; and treasurer, Dr. Ellen C. Potter. The alumnae decided to appoint a committee of five to consider the enlistment of thirty or more volunteer women physicians to be sent to Europe to aid in the care of war babies and their mothers. Dr. Harriette L. Hartley was appointed chairman of this committee and instructed to correspond with the representatives of war powers concerning the location of a hospital in the war zone for women and children.

Jefferson Alumni Meeting.—The annual banquet of the Alumni Association of Jefferson Medical College was held June 4. Dr. Francis T. Stewart acted as toastmaster and speeches were made by Mr. Potter, president of the board of trustees; Dr. William W. Keen, professor emeritus, and Prof. J. Parson Scheffer. The announcement was made of the promise of a gift of $100,000 by one of the diners for the purpose of swelling the endowment fund, the only stipulation being the raising of an equal amount by the alumni of the institution. The name of the donor was withheld. At this time Dr. William W. Keen, emeritus professor of surgery in Jefferson Medical College, was presented with two beautiful silver platters as a token of esteem and love by the association. Dr. B. Franklin Royer, Harrisburg, was elected president for the ensuing year.

WEST VIRGINIA

New State Department of Health.—An act passed by the last legislature provided for the new organization of the Health Department and that a new Council on Health should take the place of the old board of health. The following have been appointed members of the council: Dr. Samuel L. Jepson, Wheeling, commissioner of health; and Drs. William W. Golden, Elkins, Joseph L. Pyle, Chester; Will J. Davidson, Parkersburg, and Joseph E. Robins, Charleston, who were members of the old board; and Dr. J. S. Farmsworth, Frenchton, and Wilkin B. Stephens, Kimball, new members. The Council on Health will continue to perform the function of the old board as an examining board and it is announced that the next examination will be held in Charleston, July 7.

CANADA

Personal.—Dr. Robert M. Simpson, Winnipeg, chairman of the Board of Health of Manitoba, is to go to the front and take charge of a large hospital.

Hospital News.—Temporary accommodation has been provided for 100 children of the Children's Hospital, Toronto, on Toronto Island, the summer home at that point having been destroyed by fire in April. Several portable sheet steel buildings, including a dispensary have been provided.——The Canadian Militia Department have decided to accept the offer of Laval University, Montreal, for a hospital of 1,000 beds for service in England or France.——On the first day the lists were opened for the Ontario Government Hospital to be established in England, there were 100 applications from medical men. Fifty physicians and surgeons are required.

GENERAL

State-District Medical Society Meets.—The annual meeting of the Medical Society of Northern Virginia and the District of Columbia was held, May 19, in Alexandria, Va., and the following officers were elected: president, Dr. Samuel B. Moore, Alexandria, Va.; vice presidents, Drs. John B. Nichols, Washington; and George R. Cottingham, Remington, Va.; recording secretary, Dr. Thomas A. Groover, Washington; corresponding secretary, Dr. Joseph D. Rogers, Washington; and treasurer, Dr. William I. Robey, Herndon, Va.

Bequests and Donations.—The following bequests and donations have recently been announced:

Federation of Jewish Institutions, Philadelphia, $1,000, by the will of Dr. Henry Van Beil.

Up to May 28, the campaign fund for the Sisters of Mercy fund, West Philadelphia, had reached $122,048.22.

Henry A. Rexler Orphans' Home, Allentown, Pa., $60,000, by the will of Henry A. Rexler.

Jewish Hospital, Philadelphia, $2,000, for the endowment of the Leffman and Rosalie L. Hope bed, by the will of Rosalie L. Hope.

St. Joseph's Hospital, Philadelphia, $2,500, by the will of Annie Campbell.

Medical Jurisprudence Society Meets.—The third annual meeting of the American Association of Medical Jurisprudence was held at Hotel Trownvill, Long Beach, L. I., under the presidency of Mr. Charles A. Boston, New York, and the following officers were elected: president, Dr. D. Percy Hickling, Washington, D. C.; vice presidents, Mr. Oscar W. Earhorn, New York City, and Dr. Philip Coombs Knapp, Boston; secretary, Mr. Charles P. Blaney, New York City (reelected); treasurer, John Castree West, New York City; and councilors, Drs. Frank H. Daniels, Frank W. Robertson and A. Ernest Gallant, New York City; Donald D. MacTaggart, Montreal, and Reynold Webb Wilcox, New York City; and Messrs. John S. Durand, Alfred E. Ommen, Theodore Sutro, Harold Hirsch and Harry V. Osborne.

Cancer in Vermont.—The New England states have been much aroused recently on account of the higher death rate from malignant diseases, which has been reported by census statistics to prevail. The general mortality rate from cancer in the United States is 78.9 per 100,000 population. In the New England states the lowest rate was 85.1 per 100,000. Rhode Island's rate was 93.3; that of Massachusetts, 101.4; that of New Hampshire, 104.4; that of Maine, 107.5, while Vermont heads the list with 111.7 deaths per 100,000 of population. Vermont was so aroused by the publication of these statistics that the State Medical Society arranged for meetings and lectures in Rutland, Burlington, Montpelier and St. Johnsbury to start a campaign of education. These meetings were held June 8 to 11. The afternoon sessions were for the medical profession, while in the evenings the general public was invited.

FOREIGN

Deaths in the Profession Abroad.—Haltenhoff, formerly professor of ophthalmology at Bern, aged 73.——Frankenberger, professor of otology at the Bohemian University of Prague.

Our Foreign Exchanges.—The August, 1914, number of the *Journal de Chirurgie* has reached us, published in April, 1915, and the four other numbers for 1914 are promised before the end of 1915. This issue contains long summaries, some illustrated, of numerous articles in THE JOURNAL and other American publications. As is evident from our Foreign Current Literature Department, the German exchanges, all the weeklies and the high grade *Archivs* and *Zeitschrifts*, have never suspended publication, and except that their contents are devoted mostly to military surgery and hygiene, there is nothing in their aspect or make-up to suggest that their country is at war.——The *Zeitschrift für Geburtshülfe und Gynäkologie* has just been received, the first since early in the spring. This *Zeitschrift* is one of the journals issued irregularly, only as material accumulates. This number bears a mourning border on account of the death of its editor in chief, Prof. R. Olshausen a few months ago.

Chair of Tropical Diseases in Italy.—Naples was selected as the best location for the newly founded university professorship of tropical diseases, and A. Castellani has been placed in charge. Since 1903 he has been chief of the clinic for tropical diseases on the island of Ceylon, a British institution, after having worked long with Sir Patrick Manson at London. Castellani was sent to Uganda in 1901 to 1903 by the British authorities and his work there was crowned by the discovery of the causal agent of sleeping sickness. The *Riforma Medica* of Naples states that he has described about thirty new forms of tropical diseases, including endemic funiculitis and forty new species of pathogenic bacteria, such as that of Ceylon paracholera, besides several protozoa. He has also contributed much to improve bacteriologic technic and methods of vaccination.

WAR NOTES

Typhus Checked.—Reports were received by the state department in Washington, June 3, that the campaign against typhus in Serbia is going steadily forward and that the disease is being rapidly suppressed.

Training Official Disinfectors.—The state authorities in Germany have ordered all communities to make arrangements for a trained corps of disinfectors in readiness for an invasion of typhus. The training must include instruction in vermin extermination. The three-day courses are to be taken in some state disinfection training school.

Red Cross Notes.—The American Red Cross reports under date of June 5, that there were 10,000 wounded soldiers in Constantinople as long ago as May 8, and that more were arriving daily. The two Red Cross hospitals in Constantinople are absolutely filled with wounded soldiers and many of the colleges and Greek schools have been taken over by the authorities and converted into hospitals.——The Beirut, Syria, chapter of the American Red Cross has equipped a field hospital which is actively at work.

Aid for Belgian Physicians.—The report of the treasurer of the committee of American physicians for the aid of the Belgian profession, for the week ending June 5, 1915, lists the following contributions:

Dr. Arthur G. Larkin, New York, N. Y.	$ 10.00
Dr. John A. Hawkins, Pittsburgh, Pa.	10.00

Medical Society of the Co. of Greene, Catskill, N. Y.	15.00
Wilson County Medical Society, Fredonia, Kans.	15.00
Dr. Robert C. Davis, Johnstown, Pa.	5.00
Dr. Emery Marvel, Atlantic City, N. J.	25.00
Dr. G. J. Hagens Chicago, Ill.	15.00
Medical Society of the County of Westchester, White Plains, N. Y. (second contribution)	2.50
Rockland County Medical Society, Nyack, N. Y.	28.00
San Luis Valley Medical Society, Alamosa, Colo.	25.00
Receipts for the week ending June 5	$ 150.50
Previously reported receipts	7,008.50
Total receipts	$7,159.00
Previously reported disbursements:	
1,625 standard boxes of food at $2.20	$3,575.00
1,274 standard boxes of food at 2.30	2,930.00
213 standard boxes of food at 2.28	485.64
Total disbursements	6,990.84
Balance	$ 168.16

F. F. SIMPSON, M.D., Treasurer,
5 Jenkins Arcade Bldg. Pittsburgh, Pa.

FROM SIR WILLIAM OSLER

OXFORD, May 26, 1915.

Medical Notes on England at War

FUNCTIONAL NERVOUS DISORDERS

Types rarely seen in males in this country or in the United States are very common, and an explanation is to be found in the extraordinary stress and strain of the trench fighting.

Shell-Shock Paraplegia.—Without actual injury, the close proximity of the explosion causes loss of consciousness or a dazed condition which lasts for some hours or longer, with a paraplegia persisting for days or even for weeks and gradually disappearing. In the cases which I have seen, the reflexes have been present or have been increased. In one there was hypertonus of the muscles; sometimes there have been hyperesthesia and transient difficulty with the bladder and bowels. In severe cases following partial burial by the explosion, even without bruising, there may be hemorrhage and a much more serious type of paraplegia, with the legs completely flaccid and abolition of the reflexes.

Psychic "Knock-Out."—This condition, due to shell shock, is a remarkable one in which the victim remains in a state of stupor, with loss of memory and complete speechlessness or stammering, recovery following in a few days; but a condition of nervous irritability may persist for weeks.

Involvement of the Special Senses.—This is common. One man near whom a shell had exploded, but who was not struck by any fragments, had headache and a blinking tic, a constant quivering blepharospasm, so that he could not open his eyes; the conjunctivae and media were clear and there were no retinal changes. He kept the head depressed, and the photophobia was extreme, but he gradually recovered. A very puzzling case which interested us greatly at Clevedon was a man with monocular amblyopia, without visible changes in the fundus or in the reflexes; there was in the left eye complete defect of vision, except a very small area in the temporal field. Mr. Lawford, ophthalmic surgeon to the St. Thomas Hospital, who made a careful examination, concluded it was a functional defect. I see that Dr. Turner mentions a somewhat similar monocular case with ptosis.

Functional Dysbasia.—All sorts of anomalous gaits are encountered. One of the most remarkable was a tight rope walker's type in a functional dysbasia following shell shock. The subject, an intelligent young officer, wrote down the following statement about the accident:

"The Germans had been shelling our dummy trenches, which were about 20 yards to the rear of the trench in which I was. The oncoming shells give just enough warning to allow one to lean against the front wall of the trench—the position of least danger from shell fire. I heard my particular shell coming, and from force of habit leaned toward the front wall and looked toward the rear dummy trench to see the shell burst as the others had done. Suddenly there was a tremendous red bang, and the world seemed to stop stock-still for a moment. Then things started with a rush. I realized that I was clinging, sprawling, to the wall, and that men were hurrying and scrambling out of the trench. I followed them out. This was about 11:30 a. m. I was in a queer 'semidetached' sort of condition. I just clung desperately to the idea, 'I must finish my turn of duty.' (I was on duty at the time.) This idea obsessed my mind to the exclusion of all others. I did in fact finish my turn, and then returned to my dug-out and slept or dozed until I was roused by my company commander to take a turn of duty at 1 o'clock next morning until 3, which I did. I then returned to my dug-out and slept and dozed until we came out of the trenches. I walked, carrying all my equipment and pack, for about 100 yards, and then had to be supported to headquarters, where a stretcher conveyed me to the advanced dressing station. I had a headache at the base of my skull from ear to ear, and the ground behaved like the deck of a sailing yacht in a stiff breeze: that is, it seemed to slant sharply away to the right and at the same time to pitch. During the time in the trenches I had a curious freak of memory. A number of events occurred which I remember quite well, but not as having occurred then. If I may employ a simile, they are like beads of a broken necklace, which have slipped from the thread and are lying loose. For instance, one of the other subalterns recalled to my mind that I had paid him a flying visit in the trenches subsequent to my accident. I then remembered perfectly well having paid the visit, but I had no idea that it was in that time. He also reminded me of our colonel dodging shells. I quite remember the incident, but cannot place it in that time.

"One other rather horrible feature of this business has been a sort of nightmare. I have not had it for some time now, for which I am profoundly thankful. These things were not nightmares, and they occurred several times. I would allow myself to doze in the dark at night and I would suddenly realize that I was sinking slowly to a most unthinkable, dreadful place, and there were things there that were too unpleasant to even write about. I knew that if I did not make an effort to get out I would never manage it. I made prodigious struggles and broke away from it, but in the dark I couldn't be sure whether or not I was quite clear of it, and I would find myself partly out of bed and in a state of most childish alarm. I therefore tried to avoid sleeping at night and succeeded quite well. The only other symptom of any interest is that when I turn about to the right, the horizon rushes past with an unsteadying effect: whereas the other way is not abnormal."

Recumbent, the examination was negative in every particular. Dr. Ashdowne, under whose charge he was, thought the reflexes on one side were perhaps a little increased; but the point of special interest was the extraordinary gait, with the feet far apart, the arms out, the man balancing himself, and making several attempts with the hind foot before taking a step. Not long after the accident he was seen by Dr. Gordon Holmes, who thought possibly there was a cerebellar shock. He is gradually recovering, and the gait has now become much nearer natural.

Functional Spasm of Leg Muscles.—After a slight attack of trench rheumatism in the middle of February, a man had frost-bite which did not proceed to necrosis, but which left him with both feet very painful, so that he could not walk. The right foot has recovered, though the sole is still a little sensitive. On examination, May 18, he was a very healthy looking man; recumbent, the legs looked normal, but perhaps the left was a little smaller. When he was asked to lift the leg from the bed, the muscles immediately went into spasm and remained rigid. The vastus externus stood out with great prominence, and when the effort was relaxed, the spasm evidently remained in it for a longer period. The muscles were not painful; the stocking anesthesia was gradually disappearing. He could walk, but carried the leg very stiffly, and could scarcely take a step on account of the pain in the sole. The other leg had not been involved. The deep and superficial reflexes were present, perhaps a little exaggerated.

At Blenheim there was a man, aged 23, who had rheumatism and cold-bite in the feet in December, with great tenderness. For several months he had persistent spasm of the anterior tibials on both sides. He could not straighten the foot voluntarily, and passively it could be done only with the strongest effort. The anterior tibials stood out with great prominence. The knee jerks were + +. There was no Babinski or ankle clonus. He could walk on his heels, but with difficulty. There was plantar hyperesthesia. He gradually improved, and the spasm lessened with massage and electricity.

At Milton Hill, a man after frost-bite had a spasm of the muscles causing talipes, so that he walked on the outer edge of the foot. Any attempt to straighten it caused him pain and spasm. He, too, had had a stocking anesthesia and symptoms of neurasthenia. Evidently the trench warfare is a nerve-racking business, causing all forms of troubles from mild nervous break-down to the severest types of functional disorder. In many cases, tobacco is a factor. The hardened veteran may smoke from twenty to thirty cigarets a day without inconvenience, but the unseasoned soldier cannot stand such excess. Among the convalescents, many cases of rapid pulse and slight anemia are, I believe, due to tobacco. Special provision is to be made for the nervous cases, on which a group of experts is already at work.

GAS POISONING

I have referred to the inefficiency of the modern rifle bullet as a weapon of war. The high-explosive shells, the hand grenades and the shrapnel do damage enough; but now comes the barbarous device with which men try to kill each other by the use of poisonous gases. Under date of May 4, General French reported the use of gases ejected from pipes laid into the trenches. "The effect of this poison is not merely disabling or even painlessly fatal, as suggested in the German press. Those of its victims who do not succumb on the field, and can be brought to hospital, suffer acutely, and in the larger proportion of cases die a lingering and painful death. Those of its victims who survive are in little better case, as the injury to their lungs appears to be of a permanent character." The reports of acute cases describe a suffocative edema of the lungs of an appalling character. Both the Hon. Robert Bacon, late minister to France, and Dr. Harvey Cushing speak of the sufferings of the victims as passing all belief—an incessant gasping for breath, cough, and the expectoration of a thin, blood-stained albuminous fluid. The mortality is high, but in a great many mild cases there is recovery, and the patients have been sent across. I have seen about thirty. Only three cases were severe; one patient had slight cyanosis, dyspnea, and many fine bronchitic râles; two had bronchitis. The other patients were convalescent, and nothing amiss could be determined on physical examination; but in several cases there was functional disability, shown by dyspnea on the slightest exertion. One man had suppression of the breath sounds; neither the inspiratory nor the expiratory murmurs could be heard distinctly. I should say that the prognosis was good in a majority of these cases. Anatomically, it is an acute bronchitis and bronchiolitis with exudation of a highly albuminous fluid into the tissues and air cells. In Dr. Haldane's laboratory I was shown sections from two lungs which presented the most extraordinary fragmentation of the alveoli. Macroscopically, the cut surface looked like emphysema, and there were air blebs beneath the pleura. The gas appears to be chlorin, which is irrespirable in dilutions of 1:10,000. Masks saturated with solutions of sodium hyperchlorid, with glycerin to keep the material moist, appear to be an efficient protection. Certainly the gas is a great addition to the "frightfulness" of war, but it is to be hoped that the Allies may not be forced to adopt such measures of scientific barbarism.

PARIS LETTER

Paris, May 20, 1915.

The War

THE WAR AND THE MEDICAL STUDENTS

A decree of 1902 authorizes the appointment to the grade of assistant physician (which corresponds to the grade of noncommissioned officer), in case of mobilization, medical students who have taken not less than three years of medical work toward their doctor's degree. Accordingly, all medical students who have this amount of work to their credit have been, except in cases in which there were special reasons for the contrary, appointed to this grade. Notwithstanding, the number of these medical officers has become insufficient because of the losses undergone by the medical service, which have borne heavily on the assistant physicians, and also because of the appointment of a certain number of these physicians to the grade of *aide-major* (sublieutenant). To supply the ever-increasing need of the medical service, it has been decided to reduce the requirements for the position of assistant physician. The president of the republic has therefore signed a new decree which authorizes the appointment during the war as assistant physicians, either in the field or in hospitals, of medical students who have had two years' work.

The minister of war has decided that medical students who have had not less than a year's work and who are at present mobilized either in the interior zone or in the zone of the armies may be released from their present duties to be employed in the medical service either as litter bearers or as nurses.

THE WAR AND ADVERTISEMENTS FOR FOODSTUFFS

The head of the service at the prefecture of police for the suppression of frauds has been designated by the minister of agriculture to institute investigations into the quality of milk, foods and drinks sold in the zone of the armies either to the soldiers or to the inhabitants.

Since the beginning of hostilities a certain number of manufacturers have been exploiting special food products which are offered to the public as possessing remarkably superior nutritive qualities and as supplying in small volume the place of large quantities of foods which have the reputation of being nutritious. These products are advertised particularly as foods for soldiers and children. The service for the suppression of frauds has analyzed these specialties with results which should be generally known. While none of these preparations seems to be actually harmful and while some—the minority—have actual nutritive advantages, analysis shows that most of them have no such especial nutritive value as is claimed for them in the advertisements. The documents in about twenty of these cases have been laid before the attorney-general, and the manufacturers in question have been notified to cease manufacturing and selling these products immediately.

INTOXICATION BY IRRITATING GASES

Drs. A. Dujarric de la Rivière and J. Leclerq had the opportunity of seeing at Calais a number of soldiers who have been subjected to the action of irritating gases (bromin and chlorin vapors) used by the Germans at Langhemarch. Frequently, in addition to the bronchial or pulmonary phenomena, there was hepatic or renal involvement. In many patients, the pulmonary phenomena consisted of an inflammation of all the respiratory tubes, including even the finest bronchial ramifications. Two patients presented the clinical picture of hemolytic icterus and a third during several days had hemoglobinuria. Several others had persistent attacks of albuminuria. Dr. Henrot of Reims has presented before the Académie de médecine a valved respiratory mask which protects the wearer from the asphyxiating vapors.

WOUNDS OF THE HEAD BY BALLS AND FRAGMENTS OF SHELLS

At one of the last sessions of the Société de chirurgie de Paris, Dr. Vinay, surgeon of Mont-Dore, called attention to the fact that men wounded in the head should receive a very strict examination. Many such patients during the first few days show no symptoms likely to arouse suspicion of an underlying lesion of the skull and brain; often it is only after the appearance of secondary infectious phenomena that operation is performed, and then it is frequently too late. There is, therefore, good reason for early operation, but, to avoid useless exploration and operation in cases in which no good can be done, Vinay advises the following line of procedure: In bullet wounds of the head, except lesions which are evidently superficial, a large flap of the scalp should always be turned back so that the skull may be examined. In the majority of cases a lesion of the skull will be found and will then be trephined. Wounds produced by fragments of shell should be explored with a probe and the skull should be systematically examined if the probe strikes directly on a bone. In most cases this will lead to a trephining operation which would have become imperative a few days later. By following these rules one is sure to extract fragments, disinfect the wound and drain it in season. If one happens to find an uninjured skull (which is the case about one time out of ten) a few stitches will repair all the damage without injury to the wounded.

MILITARY PHYSICIANS AND THE LEGION OF HONOR

Among the physicians on the rolls of the Legion of Honor are Dr. Quénu, professor of clinical surgery at the Faculté

de médecine de Paris and principal physician of the second class (which corresponds to the grade of lieutenant-colonel) in the military government of Paris, and Dr. Potherat, surgeon of the hospitals of Paris, who as head physician of an ambulance at first at Nancy, then on the Marne and finally on the front of his army corps, "has rendered truly exceptional service."

DEATH OF DR. ALBERT BILLET

Dr. Albert Billet, principal physician of the first class and director of the medical service in the fifteenth army corps, has just died at the military hospital of Val-de-Grâce of the results of a disease contracted in service. He was a distinguished scientist and has left a great number of works dealing chiefly with the prophylaxis of epidemic and exotic diseases which have won him numerous distinctions from the Académie de médecine and the Académie des sciences.

BERLIN LETTER

BERLIN, May 11, 1915.

Personal

Prof. F. Külbs, the present assistant at the first medical clinic at Berlin, has been called to Strassburg as director of the medical policlinic, to succeed Prof. Erich Meyer.

May 4, Ernst Haeckel completed his fiftieth year as regular professor of zoology at the University of Jena. The anniversary was saddened for him by the death of his second wife a few days before. He is 81 and is still in full mental vigor. Since 1907 he has been entitled to be called *Excellenz*.

The ophthalmologist, Prof. J. Stilling, died at Strassburg, May 3, aged 73. He was the son of Benedikt Stilling, a leading anatomist and surgeon in his day. Professor Stilling's most important works were on color blindness. His tables for testing vision for colors in candidates for railroad and marine positions are in common use not only in Germany, but in other countries, and have already passed through sixteen editions. Other popular works of his are a manual on the principles of ophthalmology and reports of research on the origin of myopia, glaucoma, etc.

Causes of Death in Prussia, 1913

The vital statistics for Prussia show that the death rate during 1913 from diseases of the digestive organs was 17.39 per 10,000 inhabitants (15.94 in 1912); from old age, 15.71 (17.37); from diseases of the circulatory organs, 15.09 (15.44); tuberculosis, 13.65 (14.58); pneumonia, 12.03 (13.48); cerebral hemorrhage and other affections of the nervous system, 10.31 (10.57); congenital debility, 10.25 (10.55); cancer and other neoplasms, 8.24 (8.15); diseases of the respiratory organs, 7.85 (8.69); accidents, 4.06 (4.07); diseases of the urinary and genital organs, 2.87 (2.86); suicide, 2.21 (2.12); whooping cough, 1.89 (2.31); diphtheria and croup, 1.81 (2.04); measles, 1.75 (0.46); scarlet fever, 1.08 (1.04); puerperal fever, 0.96 (0.99); erysipelas and other wound infections, 0.92 (0.97); influenza, 0.72 (1.12); typhus, 0.34 (0.38); other contagious diseases, 0.34 (0.33); violent deaths, 0.21 (0.20); contagion from animals' diseases, 0.01 (0.01); other known causes of death, 15.89 (16.30), and unknown causes, 3.39 (3.94).

The War

THE FOOD SUPPLY

A number of recent decrees demonstrate that the food supply is becoming more fully assured. The price of flour has been reduced, and for wheat flour more than for rye flour, in order to bring the comparatively ample supply of wheat flour within the reach of the less well to do. An order was promulgated a while ago that communities should put up meat so that it would keep, but this order has been rescinded, as the supply of cattle is ample in every respect, so that precautionary measures of this kind are unnecessary.

At Berlin the bakers are no longer permitted to mix fresh potatoes in their bread dough, but potato flour can still be used. Our bread consequently begins to taste nearly natural once more. The price of all the other foodstuffs and delicacies is but little above ordinary prices, and there is no lack in any direction, the fluctuations at first being now all straightened out.

FINANCING THE FAMILIES OF PHYSICIANS ABSENT ON MILITARY SERVICE

The efforts of the profession to come to the timely financial aid of the physicians serving in the field are continued in different parts of the country. At Berlin, the Kuratorium for war absentees, organized for this purpose, has realized remarkably successful results already with the associations with which it has had dealings. The organized free-choice insurance physicians have agreed to pay the Kuratorium 10 per cent., and the Verein of Berlin insurance physicians has agreed to pay 5 per cent. of their insurance fees for the year 1915. The central organization of insurance physicians has also commended to its affiliated groups that they place 5 or 10 per cent. of their income from the insurance societies at the disposal of the Kuratorium for the period of one year. By this means, including the 55,000 marks already subscribed by the medical chambers, there will be approximately 300,000 marks on hand for the war relief emergency fund for the absentees. All the other physicians of greater Berlin are now being solicited by a subcommission to learn how much can be depended on from others outside of those under contract with the insurance societies. It is anticipated that several times the amount subscribed by the Aerztekammer will be pledged.

LONDON LETTER

LONDON, May 21, 1915.

The War

THE KING GEORGE HOSPITAL

Though all the permanent hospitals of the country have placed a large part of their accommodation at the service of the War Office, the number of wounded from this colossal war is expected to be so great that special hospitals are being erected. Of these the largest is the King George Hospital in London, which, as mentioned in a previous letter to THE JOURNAL, is the result of the conversion of a building intended for the new Stationery Office of the government. It will accommodate 1,600 patients, and the floor space is so great that 9½ acres of linoleum are required. The hospital is divided into five floors, the first being medical and the remaining four surgical. There are two operating theaters on each floor, one for septic and the other for nonseptic cases. There are special departments of all kinds and a magnificent Roentgen-ray department in the basement. The vast roof is converted into a garden with revolving shelters in which the sick can enjoy in the long summer days the coolness of a high altitude without discomfort from the wind.

PRECAUTIONS AGAINST AIR RAIDS

The German method of attack has rendered necessary the taking of precautions in London against a Zeppelin raid. The following steps have been adopted on the recommendation of the Royal Society of Medicine: It has been ascertained what hospitals, infirmaries and dispensaries could do in the event of civilians being injured in their neighborhood, first, in the matter of provision for first aid, how many individuals they could receive and treat, then to be transferred as quickly as possible to their homes, to hospitals, or to nursing homes; and secondly, how many they could receive for complete treatment. A map of the London area has been prepared and marked, showing these receiving centers with the number of cases receivable. If the map revealed that any district had no receiving center, say within a radius of one mile, application was made to the local authorities inviting them to provide some suitable place—a town hall, a public bath, a library or a school—to which the police and helpers might be directed to convey the injured. The local authorities would provide an adequate supply of the material required for first aid, and the committee have drawn up a list of such material with prices, and have arranged with some surgical supply company to provide it at cost price. Emergency centers have been marked on the map, and copies of the map or full topographic particulars have been sent to every police office. A list of surgeons, physicians and district nurses willing to help in each district has been prepared, with names and full addresses, and (when possible) telephone numbers, and a copy of each district list has been sent to each police office in the district.

THE SONS OF PHYSICIANS KILLED IN THE WAR

The medical profession has already a considerable death roll of its members killed in the discharge of their duties at the front. To this must be added the sad bereavement of the loss of sons who are combatants, in some cases only sons. Among the well-known members of the profession who have thus lost their sons are Dr. Lewis Jones, Sir Wilmot Herringham, Dr. Norman Moore, Dr. H. D. Rolleston, Sir James Barr, Mr. W. H. Battle, Dr. A. E. Garrod and Dr. Lauriston Shaw.

Association News

THE SAN FRANCISCO SESSION

An Invitation from Tacoma

The Pierce County (Washington) Medical Society extends a cordial invitation to the Fellows of the American Medical Association who attend the San Francisco session to stop over in Tacoma on their way to or from San Francisco. Dr. James R. Yocum, Box 1040, Tacoma, chairman of a committee of this society on entertainment, advises that if a few days' notice can be given, it will be glad to take visitors for a short trip on Puget Sound, or if preferred, on automobile rides about the city. The committee especially requests that parties, traveling by special train or by special car, give notice of the time when they are likely to reach Tacoma. The committee will also be glad to assist in making arrangements for trips by either rail or automobile to Rainier National Park or Mount Tacoma. For this trip, the railroad fare is $5; fare by automobile for the round trip to the inn, $6; to the foot of the glacier, $7; to Paradise Valley, $8. The trip by train takes part of each of two days. The automobile trip can easily be made in one day.

Marriages

GEORGE WARD DISBROW, M.D., Newark, N. J., to Miss Virginia W. Sprecher of Sykesville, Md., in Washington, D. C., May 23.

CAPT. FLOYD KRAMER, M. C., U. S. Army, to Miss Dorothy Millikin Bevans, at Fort H. G. Wright, Fisher's Island, N. Y., May 25.

EDWARD NEWMAN ROBERTS, M.D., Pocatello, Ida., to Miss Florence Bloom of West Burlington, Ia., May 27.

DAVID LINN EDSALL, M.D., Boston, to Miss Pendleton Kennedy of Washington, D. C., June 2.

ALFRED HOFF, M.D., St. Paul, to Mrs. Merrun Dyer, at St. Luke's Hospital, St. Paul, recently.

THOMAS JOSEPH TONER, M.D., Gary, Ind., to Miss Alma M. Hoffmeister of St. Louis, June 8.

ISAAC W. BREWER, M.D., to Miss Charlotte Underhill of Bath, N. Y., June 8.

ERNEST LACKNER, M.D., to Mrs. Carrie Klein, both of Chicago, June 3.

ISIDOR HELLER, M.D., to Miss Ida Engel, both of Brooklyn, June 1.

Deaths

Lewis C. S. Turner, M.D. College of Physicians and Surgeons, Keokuk, Ia., 1882; a Fellow of the American Medical Association and once president of the Jasper County (Ia.) Medical Society; for thirty years a practitioner of Colfax, Ia., and for fourteen years of that time medical director of the Victoria Sanitarium; for many years health officer of Colfax and for three years a member of the local school board; died in the Mount Pleasant (Ia.) State Hospital, May 18, from arteriosclerosis, aged 60.

Fayette Hamilton Peck, M.D. New York University, New York City, 1881; a Fellow of the American Medical Association; surgeon in chief of the Utica and Mohawk Valley Electric Railway Company; local surgeon of the New York Central Lines; senior surgeon to St. Luke's Hospital and gynecologist to and president of the medical staff of the Utica City General Hospital; formerly health officer of Utica, N. Y.; died at his home in that city, May 24, from heart disease, aged 59.

James MacArthur, M.D. Queen's University, Kingston, Ont., 1878; president and for many years a member of the Ontario Medical Council; one of the founders of the London (Ont.) Medical Association; jail physician of London for more than fifteen years; died at his home in London, May 23, from heart disease, aged 60.

William James Gills, M.D. University College of Medicine, Richmond, Va., 1901; a member of the Medical Society of Virginia and secretary of the Mettauer Medical Society; formerly surgeon of the Third Battalion, Seventieth Infantry, Virginia Volunteers; physician to the almshouse of Prince Edward County, Va.; formerly a member of the town council of Farmville, Va.; died in the Johnston-Willis Sanitarium, Richmond, Va., May 22, from pellagra, aged 37.

Henry Bak, M.D. University of Vienna, Austria, 1872; formerly a surgeon in the Austro-Hungarian army and later a surgeon of volunteers during the Spanish-American War; president of the faculty and professor of practice of medicine and pediatrics in the Southern College of Medicine and Surgery, Atlanta, Ga.; for several years a practitioner of Chicago; died in the Michael Reese Hospital in that city, May 25, from carcinoma of the bladder, aged 68.

James Orton Edie, M.D. Jefferson Medical College, 1874; a member of the Michigan State Medical Society and Grand Rapids Academy of Medicine; formerly local surgeon at Grand Rapids of the Lake Shore and Michigan Southern Railway; consulting surgeon to the Butterworth Hospital and consulting physician to the Union Benevolent Association Hospital, Grand Rapids; who recently moved to Everett, Wash.; died in that city, May 25, aged 77.

James Francis Jacob, M.D. Jefferson Medical College, 1893; of Throop, Pa.; a Fellow of the American Medical Association and one of the best known Mid-Valley practitioners; one of the leaders in the work of caring for the widows and orphans of the great Pancoast disaster and since that time instructor in first aid at the mines; died in the Burns Private Hospital, Scranton, May 24, two days after an operation for gallstones, aged 44.

William Monroe Carling, M.D. Medico-Chirurgical College of Philadelphia, 1897; of Battle Creek; a member of the Michigan State Medical Society and the Southwestern Michigan Triological Society; formerly clinical assistant in ophthalmology in the Denver and Gross College of Medicine of the University of Denver, Colo.; a specialist on diseases of the eye, ear, nose and throat; dropped dead while playing golf at Battle Creek, Mich., May 30, aged 42.

Orange Pomeroy, M.D. Cincinnati College of Medicine and Surgery, 1860; Bellevue Hospital Medical College, 1871; of Chardon, Ohio; assistant surgeon of the Sixteenth Ohio Volunteer Infantry during the Civil War; manager and for twenty years president of the Chardon Telephone Company; died at his winter home in St. Petersburg, Fla., May 17, aged 79.

Melvin S. Jones, M.D. Western Reserve University, Cleveland, 1877; for several years a practitioner of Battle Lake and Dead Lake, Minn.; a member of the legislature from Ottertail County, Minn., in 1902; for the last year a resident of Orange, Calif.; died at his home in that place, May 19, from heart disease, aged 60.

Julia W. Carpenter, M.D. Woman's Medical College of Pennsylvania, Philadelphia, 1870; a Fellow of the American Medical Association; president of the Cincinnati Obstetrical Society in 1902, and vice-president of the Cincinnati Academy of Medicine in 1904; died at her home in Walnut Hills, Cincinnati, May 23, aged 74.

William S. Stewart, M.D. Hospital College of Medicine, Louisville, Ky., 1895; of Pine Bluff, Ark.; a Fellow of the American Medical Association and secretary of the State Board of Medical Examiners of the Arkansas Medical Society; died in Hot Springs, Ark., May 31, from acute nephritis, aged 45.

Paul H. E. Sloan, M.D. Medical College of the State of South Carolina, Charleston, 1859; surgeon in the Confederate service throughout the Civil War, and later a physician and druggist of Pendleton, S. C.; for many years secretary and treasurer of Clemson College, Pendleton; died at his home, May 15, aged 79.

Charles Henry Rosenthal, M.D. Cooper Medical College, San Francisco, 1881; University of Leipzig, Germany, 1884; a Fellow of the American Medical Association and one of the most prominent practitioners of San Francisco; died at his home in Berkeley, Calif., May 24, from angina pectoris, aged 58.

William Marion Forman, M.D. University of Louisville, Ky., 1877; for many years a practitioner of Nelson County, Ky., and at one time deputy internal revenue collector in that county, but since 1896 a resident of Louisville; died at the home of his son in that city, May 24, from heart disease, aged 59.

J. F. Coughenour, (license, Mont., 1889); a veteran of the Civil War and a pioneer of Montana; in the early days clerk of the district court at Deer Lodge; later a practitioner of the Bitter Root Valley at Corvallis; died at his home in Hamilton, Mont., May 18, from cerebral hemorrhage, aged 71.

Reuben Robinson, M.D. University of Nebraska, Lincoln and Omaha, 1896; also a graduate in pharmacy; for several years a member of the teaching staff of his alma mater; formerly a member of the State Medical Association of Texas; died at his home in San Antonio, Texas, May 20, aged 54.

John Robertson McIntosh, M.D. University of Edinburgh, Scotland, 1888; of St. John, N. B.; a member of the American Ophthalmological Society; a specialist on diseases of the eye, ear, nose and throat; died at his home in St. John, May 20, from cerebral hemorrhage, aged 53.

John E. McCuaig, M.D. Queen's University, Kingston, Ont., 1891; well known as an alienist of northern Pennsylvania; for several years a member of the staff of the Danville (Pa.) State Hospital; died at his home in Erie, Pa., May 18, from uremia, aged 47.

Daniel E. Berryman, M.D. University of Edinburgh, Scotland, 1873; for more than forty years a practitioner of St. John, N. B., and since 1883 coroner for the City and County of St. John; died at his home in St. John, May 17, from cerebral hemorrhage, aged 68.

Francis P. Troxell, M.D. University of Pennsylvania, Philadelphia, 1865; a veteran of the Civil War; a practitioner of Allentown and later in the fire insurance business; for several years owner of a fruit farm at Pomona, Calif.; died in Los Angeles, May 14, aged 80.

David Ballantyne Anderson, M.D. Johns Hopkins University, Baltimore, 1913; of Salt Lake City, Utah; an intern in Mount Sinai Hospital, New York City; aged 27; was accidentally drowned during a heavy windstorm, May 26, while canoeing on Lake George.

Henry Martin Rising, M.D. Yale University, New Haven, Conn., 1868; a member of the Connecticut State Medical Society; for forty-five years a practitioner of South Glastonbury, Conn.; died at his home in that place, May 18, from arteriosclerosis, aged 71.

Emil Kunz (license, Illinois, 1891), a practitioner since 1877; a member of the German Medical Society of Chicago and a well-known anatomic draughtsman; died at his home in Chicago, May 25, from cerebral hemorrhage, aged 66.

William Green Torrence, M.D. Dearborn Medical College, Chicago, 1907; Leonard Medical College, Raleigh, N. C., 1908; a respected colored practitioner of Asheville, N. C.; died at his home in that city, about May 24, aged 34.

Henry Dare Moore, M.D. Jefferson Medical College, 1887; a Fellow of the American Medical Association and a member of the surgical staff of the Philadelphia Stomach Hospital; died at his home in Philadelphia, May 27, aged 50.

Sumner Carruth Saville, M.D. Harvard Medical School, 1894; a Fellow of the American Medical Association; and a well-known practitioner of Boston; died at the home of his mother in Cambridge, Mass., May 27, aged 47.

John Rice Eldridge, M.D. Cooper Medical College, San Francisco, 1894; a specialist on nervous and mental diseases; formerly a member of the faculty of his alma mater; died at his home in Berkeley, Calif., May 23, aged 50.

Hilliard J. Yarbrough, M.D. Eclectic Medical University of Kansas City, Mo., 1905; of Dallas, Tex.; formerly a member of the Board of Health of Ada, Okla.; died at the home of his niece in Dallas, Tex., May 23, aged 63.

James Henry Joyce, M.D. Tufts College Medical School, Boston, 1903; formerly a member of the Massachusetts Medical Society; city physician of Salem, Mass., since 1906; died at his home in that city, May 28, aged 34.

Alexander Ault, M.D. McGill University, Montreal, 1886; for more than forty years a practitioner of Oshkosh, Wis.; but since 1908, a resident of Brooklyn; died at the home of his daughter in that city, May 19, from cerebral hemorrhage, aged 77.

Thomas William Nave, M.D. Tulane University, New Orleans, 1900; formerly a Fellow of the American Medical Association; a member of the State Medical Association of Texas; died at his home in Galveston, Tex., May 13, aged 37.

Max A. Boesger, M.D. Western Reserve University, Cleveland, 1884; formerly a member of the city council of Cleveland and coroner of Cuyahoga County, Ohio; died May 18, at his home in Cleveland, from appendicitis, aged 54.

Isaac T. Rand, M.D. Tulane University, New Orleans, 1886; a member of the Louisiana State Medical Association and once president of the Attakapas Medical Society; died at his home in New Iberia, La., May 14, aged 49.

John Samuel Hood, M.D. University of Michigan, Ann Arbor, 1867; a veteran of the Civil War and in 1898 a member of the legislature from Fleming County, Ky.; died at his home in Neption, Ky., May 14, aged 75.

William T. S. Duvall (license, District of Columbia), a practitioner since 1865; from 1867 to 1882, an employee of the postoffice department, Washington; died in Garfield Hospital, Washington, D. C., May 16, aged 80.

Alfred Bland Tucker, M.D. Southern Medical College, Atlanta, Ga., 1886; Long Island College Hospital, 1887; a member of the Medical Society of Virginia; died at his home in Berryville, Va., May 14, aged 58.

Gilbert L. Parker, M.D. Jefferson Medical College, 1874; a veteran of the Civil War, at the close of which he retired from service with the rank of lieutenant-colonel; died at his home in Philadelphia, May 19, aged 82.

Daniel E. Fuller, M.D. University of Buffalo, 1878; a member of the Michigan State Medical Society; died at his home in Hastings, Mich., May 12, from a fever contracted during a sojourn in Florida, aged 58.

William Neilson, M.D. Harvard Medical School, 1872; a member of the Massachusetts Medical Society and for many years a practitioner of Leominster, Mass.; died in the Leominster Hospital, May 14, aged 74.

Hugh Thomas D'Arcy, M.D. Wisconsin College of Physicians and Surgeons, Milwaukee, 1897; for several years a practitioner of Bloomington, Ill.; died at his home in Chicago, May 13, from sciatic rheumatism.

T. J. Murray, M.D. Kentucky School of Medicine, Louisville, 1878; for many years health officer of Somerville County, Tex.; died at his home in Glen Rose, Tex., about May 6, aged 78.

Alexander S. Johnson, M.D. Southern Medical College, Atlanta, Ga., 1881; a physician and druggist of Bowman, Ga.; died at his home in that place, May 5, from cerebral hemorrhage, aged 59.

William S. Pearsall, M.D. New York Homeopathic Medical College, New York City, 1886; died at his home in Brimfield, Mass., February 18, from interstitial nephritis, aged 54.

Dudley O. Wedge, M.D. Jefferson Medical College, 1874; formerly of Ipava, Ill.; but since 1908 a resident of Chicago; died at the home of his daughter in that city, May 11.

C. W. Gotcher, M.D. Memphis Hospital Medical College, Memphis, Tenn., 1900; died at his home in Garza, near Denton, Tex., May 8, from heart disease, aged 41.

John M. Scott (license, Pa., 1881); a practitioner of Cabot, Pa., since 1871; died at his home in that place, May 20, from cerebral hemorrhage, aged 65.

Marion C. Castleberry, M.D. Gate City Medical College, Texarkana, Tex., 1904; died at his home in Harmony, Tex., April 4, from lobar pneumonia, aged 41.

Joseph Olmstead Allen, M.D. University of Buffalo, 1851; a retired practitioner of Fayette, Ohio; died at his home, May 20, from arteriosclerosis, aged 85.

Stephen Townsend, M.D. University of Wooster, Cleveland, 1891; died at his home in Columbus, Ohio, May 15, from cerebral hemorrhage, aged 67.

J. W. Bandel, M.D. Memphis Hospital Medical College, Memphis, Tenn., 1903; died recently at his home in Ramona, Okla., from cerebral hemorrhage.

Robert Roy McCall, M.D. Barnes Medical College, St. Louis, 1900; formerly of Fulton, Mo.; died at his home in Alameda, Calif., May 8, aged 36.

John Franklin Holt, M.D. Rush Medical College, 1884; of Assumption, Ill.; died at St. Mary's Hospital, Decatur, May 17, from diabetes, aged 75.

J. W. Bozeman, M.D. Medical College of Georgia, Augusta, 1849; died at his home in Marietta, Ga., March 6, from senile dementia, aged 89.

William C. Raynor, M.D. Hahnemann Medical College, Chicago, 1881; a veteran of the Civil War; died at his home in Milwaukee, Wis., May 12.

William Veloss Huffman, M.D. Jefferson Medical College, 1887; died at his home in Millersburg, Ky., May 16, aged 56.

The Propaganda for Reform

In This Department Appear Reports of the Council on Pharmacy and Chemistry and of the Association Laboratory, Together with Other Matter Tending to Aid Intelligent Prescribing and to Oppose Medical Fraud on the Public and on the Profession

MORE EPILEPSY CURES

Some of the Less Important Nostrums of This Type

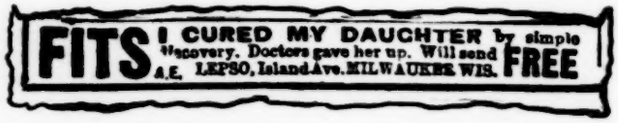
E-LEP-TINE

E-Lep-Tine is an epilepsy cure of the usual type. It is put on the market by the Miller Medicine Company, St. Mary's, Kan. This concern apparently has connected with it:

George Miller, M.D.
A. DeDonder
R. G. Erbacher

George Miller, according to our records, was graduated by the University of Pennsylvania in 1878. In addition to its "cure for fits" the Miller Medicine Company also puts out a purgative tablet "Rellim"—a rather obvious inversion of Miller. E-Lep-Tine has been marketed under the usual misleading claims, and there is nothing about the advertising matter to lift this product above the mediocrity of fraudulence common to epilepsy nostrums. "A large number of so-called 'cures' have been offered to afflicted persons," says the Miller Medicine Company, "but very few of them have effected any absolute cures." But:

"Dr. Miller has to his credit now more cures than any practicing physician."



The references in the advertising matter to the fact that taking E-Lep-Tine will produce drowsiness in the patient and, in certain instances, "cause small pimples to show on the body" naturally leads one to conclude that the essential drug in E-Lep-Tine, as might be expected, is some form of the bromids.

The Indiana State Board of Health in the second edition of its bulletin on "Medical Frauds" gives the following information regarding E-Lep-Tine:

Sodium and potassium bromides.....16 per cent.
Alcohol ..... 6 per cent.
Ammonium valerate.

The Indiana chemists also state that while the price of this nostrum is $1.75, its value is 10 cents.

HERBETTA CURINE

Herbetta Curine is put on the market by the Herbetta Medicine Co., Indianapolis, Ind. According to the advertising matter:

"Herbetta Curine is not an old remedy worked over. . . . it is not a nostrum or patent medicine. It is a scientific combination of four tablets discovered only after prolonged and diligent experience and research."

The company says that Herbetta Curine is not a cure-all; it is merely intended:

"To improve the digestion and assimilation of food."
"To restore tone and vigor to the wornout and exhausted nervous system."
"To restore the natural action of the liver, kidneys and bowels."
"To make rich blood."
"To put health and life into the whole body."
"To restore the sexual organs to their natural functions."

A specimen of Herbetta Curine was received from a correspondent recently. The package contained three envelopes labeled 1, 2 and 3, respectively, and in addition a number of red tablets. The following examination is reported by the Association's laboratory:

Envelope No. 1:—This contained small, light green tablets. Tests indicated that these tablets contained a water-soluble phosphate of iron.

Envelope No. 2:—This contained small gray tablets which were very bitter and probably consisted essentially, or largely, of some "bitter tonic."

Envelope No. 3:—This contained small green tablets which responded to tests for aloes or aloin. These tablets constituted the laxative agent in the "treatment."

Red Tablets:—These had a strong odor of sassafras and tests indicated that they were essentially strontium and potassium bromid.

Each "treatment" costs $5 and the company offers to issue a "guarantee" to the effect that after thirteen treatments are taken the victim may have subsequent treatments for $1.50 each "as long as treatment may be needed."

LEPSO

Lepso is sometimes advertised under the name of M. Lepso, Box 226, Milwaukee, Wis., and at other times by the Lepso Company, Island Avenue, Milwaukee. In addition to advertising in the cheap magazines the Lepso Company has obtained the names of victims by purchasing them from letter brokers. In this connection the following paragraph from a circular letter sent out by the Lepso Company is interesting.

"A dealer in lists of names informed me that he had some names of people who are afflicted with Epilepsy for sale and he thought that I could use these names. I inquired as to how he happened to get his list of names and was informed that a so-called Epileptic Remedy company had sold them to him. So evidently once upon a time you must have answered an advertisement of a so-called company. It was certainly surprising for me to learn that these companies have no more loyalty or respect for the confidence of their customers than to betray them in this manner. As for myself, I would never think of selling the names of people who answer our ad. We keep all letters strictly confidential as any firm ought to have honor enough to do. Well, I got this list of names from this dealer because I know that our 'LEPSO' is a real fit remedy."

After a cursory analysis of Lepso in 1911 the Association's chemists reported:

"Contains bromids equivalent to about 6.8 grams potassium bromid in each fluidounce."

As the dose recommended was one-half ounce, this was equivalent to giving 3.4 grams (51 grains) of potassium bromid to the dose. Such a dangerous mixture may be sold indiscriminately to the public without warning or even mention of presence of bromids.

Correspondence

Venarsen—A Disclaimer

To the Editor:—I enclose a pamphlet, received from the Venarsen Company, which states that venarsen is being used in the Vanderbilt Clinic by several men including myself.

Several weeks ago an agent of the Venarsen Company called to see me and I promised to give venarsen an experimental trial. The enclosed advertisement was sent to the profession actually before I had received the samples of venarsen. When the samples were received, they were not even opened, but were sent back to the company by express. You can see, therefore, that the Venarsen Company had no right whatsoever to use the names of any of the men associated with the Vanderbilt Clinic. Even if we had experimented with the drug and found it to be a valuable product, we would not allow our names to be used in this way. You can see therefore, that the company is entirely unscrupulous, and deserves to be severely chastised for misusing the names of reputable physicians.

I wish to say also that the publishers of the *Journal of Cutaneous Diseases* accepted a venarsen advertisement on a short contract. A short contract was given so that the advertisement could be discontinued if the Council on Pharmacy and Chemistry of the American Medical Association reported unfavorably on the product. We understand that the Council has reported unfavorably, and therefore, the

venarsen advertisement will be removed from the *Journal of Cutaneous Diseases.*

This letter is approved by every physician you find on the pamphlet, and who belongs to the staff of the Vanderbilt Clinic. I wish that you would feel at liberty to publish this letter if you so desire, or to use it in any way you think advisable. GEORGE M. MACKEE, M.D., New York.

Editor, *Journal of Cutaneous Diseases.*

The Opera Glass in Roentgen Examination

To the Editor:—For the past year I have had occasion to examine a great many roentgenograms, mostly of the chest. I observed that certain shadows were more or less constant in the hilum of both lungs, more on the right than on the left. Trabeculae extending in all directions could be seen in most plates, but very indistinctly. It occurred to me that if one could magnify the plate in some way, the finer shadows could be brought out. I procured an ordinary pair of opera glasses, and placed the plate where a strong light, either artificial or natural, would bring out the shadows. Standing about 15 feet away and focusing the glasses, I obtained a much enlarged view of the plate, clearer in outline and an almost stereoscopic picture.

The advantages of this method of inspecting roentgenograms are:

1. A small picture could be taken to bring out the detail of the part to be examined and could be enlarged merely by looking at it with the opera glasses.
2. A clearer view will be obtained.
3. The picture is almost stereoscopic.
4. No expensive apparatus is necessary.

J. J. SINGER, M.D., St. Louis.

The Treatment of Lice of the Eyelashes and Brows by Hydrogen Peroxid

To the Editor:—In view of the increased interest in body parasites as a cause in transmitting disease, I wish to call attention to the great value of hydrogen peroxid in the treatment of pediculi ciliaris, or lice of the eyelashes and brows. My experience in the treatment of this disgusting pest with the various mercurial solutions and ointments usually recommended and employed for the purpose of destroying these parasites has not been satisfactory. While it is possible after a few days' use of mercurial preparations to destroy the lice, this does not rid the patient of the ova or nits. The treatment must be continued for days and weeks—until all of the ova are hatched. The ova cling tenaciously to the hairs, and the cause of the trouble is controlled if the ova are removed at once. By the application of a ten volume strength of hydrogen peroxid simply by mopping the eyelashes or brows with the solution on absorbent cotton and then passing the hairs through a pair of sterilized Kuhnt's or Noyes' trachoma forceps, the living parasites and ova will be removed in a few minutes, thus putting a quick end to the affection. There is no danger of bleaching the hair, from this limited use of hydrogen peroxid.

EDWARD L. MEIERHOF, M.D., New York.

Preventive or Prophylactic Packet in the Navy

To the Editor:—Apropos of the recent circular letter of the Secretary of the Navy to the commanding officers, in which that official refuses to authorize the issue of the "preventive or prophylactic packet" to the sailors on our war ships, I wish to inquire whether it is not possible to change the method of furnishing this packet so that the responsibility for its use would be squarely placed where it belongs—wholly on the men who use it? I grant that it is questionable whether the government should countenance immorality by providing against the consequences thereof. At the same time if the use of this packet is discontinued, this discontinuance will indubitably have as a practical result a greater incidence of disease. On the other hand its use, as is well known, has resulted and would continue to result in conserving health and effecting a considerable economy.

It is manifest that sailors must have the same use of their freedom as the ordinary citizen and every man must determine his conduct for himself. The Secretary of the Navy must admit that in the present state of human progress, we have only a choice of evils and in such a case, duty bids us choose the least.

Could not the government, as represented by its officers, emphatically warn the soldiers and sailors of the dangerous results from illicit indulgence and while absolutely refusing to countenance any infraction of the moral law, place within the reach of all the "preventive packet" in such a manner that its use would be absolutely the individual act of the sailor or soldier?

I have only the knowledge of a civilian and a medical man on this subject, but am of the opinion that, if it is not already done in the Army and Navy, arrangements should be made whereby every man would have brought home to him a knowledge of the dangers and fateful consequences of venereal diseases. After this is done, every man must decide for himself as to his conduct.

I wish to raise the above question for consideration and discussion.

Yours very truly,

RICHARD DEWEY, M.D., Wauwatosa, Wis.

Sphygmomanometer Cuff in Intravenous Injections and Hyperemic Treatment

To the Editor:—In THE JOURNAL, Jan. 9, 1915, p. 182, was an abstract of an article on the use of the cuff of the sphygmomanometer to cause a venous stasis, in introducing a needle for intravenous injection. I have used this method for a couple of years, and I believe the main part of its usefulness is the fact that by covering the release valve with a sterile towel, the pressure in intravenous injection can be relieved without breaking aseptic technic or requiring the assistance of a second person.

Also I find this apparatus to be very efficient in giving Bier's hyperemic treatment, because a definite venous stasis can be regulated by the definite pressure in the arterial supply, thus eliminating the guesswork which is evident with the old tourniquet method for producing hyperemia.

ARTHUR A. RANG, M.D., Washington, Ind.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

THE HARRISON NARCOTIC LAW

A PROTEST AGAINST THE ANNUAL FEE

To the Editor:—I have addressed the following inquiry to the Secretary of the Treasury. I have no fault to find with the provisions of the Harrison law, and in line with your editorial suggestions I believe that the profession should willingly give what time and trouble is necessary to carry out its provisions. I do believe, however, that it is time for the profession to rise in mighty protest against the petty exactions which are being piled on by the authority "Regulation" (and even without), for it is news to me that laws can be amended and amplified by any executive power, as is most certainly being done. H. S.

"To the Secretary of the Treasury:—Inasmuch as the Harrison law reads that 'on and after the first day of March, nineteen hundred and fifteen, every person . . . shall register, etc. . . . and on or before the first day of July, annually thereafter, . . . shall pay to the said collector a special tax, etc.,' I have the honor to inquire by what authority of law we are now required again to register, with the attendant trouble, expense and absurdity of being required to make personal affidavit to a fact which is a matter of public record—i. e., our legal qualifications to practice medicine.

ANSWER.—The protest of our correspondent is evidently called out by a circular letter recently sent out by the collectors of internal revenue of the various districts to all persons liable for internal revenue taxes. Physicians registered under the Harrison law are called on for the payment of

the annual special tax of $1 imposed by that law. The law provides that at the time of registration and on or before the first day of July annually thereafter, every person who handles any of the specified drugs shall pay to the collector of his district a special tax at the rate of $1 per annum. As has been previously explained, the law went into effect March 1, 1915. The fiscal year of the United States government runs from July 1 to June 30. Consequently, the tax for the fraction of the year from March 1, 1915, to July 1, 1915, was prorated, each person registering paying 34 cents for the fraction of the year. It was explained at the time that a further payment of $1 would be necessary on or before July 1. This payment will cover the special tax until July 1, 1916, when another payment will be necessary. Consequently, the letter sent out by the collectors of internal revenue of the different districts is not a demand for reregistration, but is simply a notice for the payment of the annual tax. The receipt for the payment of this tax, like all internal revenue taxes, is in the form of a special tax stamp. This method of collecting taxes is the same for all persons affected by internal revenue measures. The letter sent out by the collector of internal revenue for the Chicago district went to 70,000 taxpayers in this district alone, including proprietors of theaters, shows, billiard and pool tables, bowling alleys, dealers in tobacco, liquor, oleomargarin, physicians, druggists, dentists and others. It was not a special measure applicable to physicians alone.

The application of an internal revenue tax to physicians is an entirely new proposition. It is not strange, therefore, that many physicians, like our correspondent, resent the necessary routine measures unavoidably connected with the collection of such a tax. It is well for a physician to remember, however, that the imposition of this small and nominal tax marks the first effort which has been made by the federal government to control the use of habit-forming drugs and to restrict them to legitimate purposes. The collection of this registration fee each year is a necessary part of the operation of the law. The circular to which our correspondent objects is simply a notification to persons registered under the law that the annual tax under the law is due and payable.

ALLEN METHOD OF TREATING DIABETES

To the Editor:—Can you send me or tell me where I can get literature on Allen's method of treating diabetes?

P. H. GREELEY, M.D., Farmington, N. H.

To the Editor:—Please describe in full Allen's treatment for diabetes.

G. G. WHITE, M.D., Elkaden, Iowa.

To the Editor:—How may I learn enough about the Allen starvation plan to use it? E. M.

ANSWER.—According to Allen, the first step is to fast—preferably in bed—until glycosuria ceases, and then for from twenty-four to forty-eight hours longer. Acidosis, if present, is thus rapidly reduced. Alcohol may be given during the fast, in the form of whisky or brandy. When the fasting patient has been free from glycosuria from twenty-four to forty-eight hours, the next step is to begin feeding very slowly and cautiously. A fixed program is unnecessary. It is desirable to establish the diet to suit the needs of the individual patient. The one requirement is that the patient must remain free from both glycosuria and acidosis. Any trace of sugar is the signal for a fast day. The original fast, to clear up the urine, may be anywhere from two to ten days in length, but after that no fast need be longer than one day. The factors to be considered in the diet are protein, carbohydrate, fat and bulk. Frequently the first thing given after the fast is carbohydrate. No distinction is necessary between different forms of starch, but there are advantages in using vegetables. The first day after fasting, the only food may be 200 gm. of vegetables of the class containing 5 and 6 per cent. of carbohydrates. This is increased day by day until a trace of glycosuria appears, which is checked by the fast day. The purpose of such a program is to learn the carbohydrate tolerance and to clear up the least trace of acidosis.

After the carbohydrate period, according to Allen, or sometimes in place of it, protein may be given. On the first day perhaps one or two eggs are given and nothing else. More protein, such as eggs and meat, is added day by day until the patient either shows glycosuria or reaches a safe protein ration. The purpose is to learn the protein tolerance and to regain protein lost as quickly as possible. Fat is somewhat less urgently needed except in weak and emaciated patients. It can be added gradually as conditions seem to indicate. An element of bulk in the diet is necessary to give a comfortable feeling of fulness and to prevent constipation. For this purpose, green vegetables are advantageous. When they are fed raw, cooked in steam, or boiled and evaporated, so that no water is thrown away, it is possible to estimate the quantity of carbohydrate, and the valuable salts remain. If the case is so severe that even green vegetables cannot be tolerated, the vegetables may be boiled through three waters, throwing away all the water. Nearly all starch is thus removed, and the most severe cases may take these thrice-cooked vegetables.

One result of the initial program described is loss of weight. The attempt to put on too much weight, according to Allen, is one of the sure ways of bringing back all symptoms, and is probably one of the chief causes of past failure in treating severe cases.

In brief, it is necessary to restrict all classes of food, and to test the tolerance of each patient in each particular class. Carbohydrate is given if possible, but is kept safely below the limit of tolerance. The following articles may be consulted:

Allen, F. M.: Studies Concerning Glycosuria and Diabetes, Boston, Harvard University Press, Cambridge, Mass., 1913, $9. (Theoretical and experimental; does not deal with treatment of patients.)

Allen, F. M.: Studies Concerning Diabetes, THE JOURNAL, Sept. 12, 1914, p. 939.

Allen, F. M.: Treatment of Diabetes, *Boston Med. and Surg. Jour.*, Feb. 18, 1915.

Hill, L. W., and Sherrick, J. L.: Allen's Treatment of Diabetes, *Boston Med. and Surg. Jour.*, May 13, 1915; abstr., THE JOURNAL, May 29, 1914, p. 1875.

DENTAL CLINICS

To the Editor:—In THE JOURNAL, May 22, 1915, p. 1782, the statement is made, in reply to the inquiry of "R. B.," that "New York City has a number of school clinics maintained by the board of education, and there are four clinics in connection with the various hospitals, maintained by cooperation of the dentists and various philanthropic organizations of that city."

The facts are that the board of education has no dental clinics for schoolchildren. The board of health has seven dental clinics, six with paid dentists and one with a volunteer dentist in attendance. There are in New York City, aside from these municipal dental clinics, twenty-one clinics for the free dental treatment of schoolchildren.

I feel sure that there has been some misunderstanding on Dr. Ebersole's part regarding this matter and, on behalf of the Bureau of Child Hygiene of the Department of Health of New York City, I should like to have this correction made in the same column in which the original letter appeared.

S. JOSEPHINE BAKER, M.D.,
Director, Bureau of Child Hygiene, New York.

LITERATURE ON MASTITIS

To the Editor:—Please give me references to articles on mastitis, with special consideration of the bacteriology, prophylaxis and treatment.

ADAM P. LEIGHTON, JR., M.D., Portland, Maine.

ANSWER.—The following is a list of articles on this subject:

Eicher, S.: Acute Mastitis, *Beitr. z. Geburts. u. Gynäk.*, 1912, xvii, No. 2; abstr., THE JOURNAL, July 13, 1912, p. 150.

Strong, R. A.: Mastitis, abstr., THE JOURNAL, May 18, 1912, p. 1538.

Bertels, A.: Chronic Septic Mastitis and Malignant Degeneration, *Deutsch. Ztschr. f. Chir.*, September, 1913; abstr., THE JOURNAL, Nov. 1, 1913, p. 1669.

Keyes, A. B.: Mastitis Lactantia, *Surg., Gynec. and Obst.*, September, 1914.

Hauch, E.: Treatment of Puerperal Mastitis, *Ugesk. f. Læger.*, April 23, 1914; abstr., THE JOURNAL, May 30, 1914, p. 1766.

Mastitis in Mumps, Queries and Minor Notes, THE JOURNAL, May 23, 1914, p. 1681.

Whitcher, B. R.: Mastitis in Pregnancy, Report of Case, *Boston Med. and Surg. Jour.*, Dec. 24, 1914.

Van Lier, E. H.: Chronic Septic Mastitis, *Nederlandsch Tijdschr. v. Geneesk.*, 1915, ii, No. 8.

Muller, G. P.: Chronic Septic Mastitis, *Ann. Surg.*, November, 1914.

Capps, J. A., and Davis, D. J.: Epidemic of Streptococcus Sore Throat in Jacksonville, Ill. Traced to Milk of Cows with Streptococcus Mastitis, *Arch. Int. Med.*, November, 1914; abstr., THE JOURNAL, Dec. 5, 1914, p. 2071.

Human Evaluation.—The study of human values can only be made in the light of mankind's regard for itself. This has been, in all times, all ages and all countries, the lightest of human considerations. My observations lead me to believe that mankind has not improved the treatment of itself. The human sacrifice is required just as much today as it ever was in the Temple of Baal or on the altars of the Aztecs.—Seitz.

Medical Education and State Boards of Registration

COMING EXAMINATIONS

ALABAMA: Montgomery, July 6. Chairman, Dr. W. H. Sanders, Montgomery.
ALASKA: Juneau, July 6. Sec., Dr. Harry C. DeVighne, Juneau.
ARIZONA: Phoenix, July 6-7. Sec., Dr. John Wix Thomas, Phoenix.
CALIFORNIA: San Francisco, June 15-18. Sec., Dr. Charles B. Pinkham, 727 Butler Bldg., San Francisco.
CONNECTICUT: New Haven, July 13. Sec., Dr. Charles A. Tuttle, 196 York St., New Haven; Eclectic: New Haven, July 13. Sec., Dr. T. S. Hodge, 19 Main St., Torrington; Homeopathic: New Haven, July 13. Sec., Dr. Edwin C. M. Hall, 82 Grand Ave., New Haven.
DELAWARE: Dover and Wilmington, June 15-17. Sec., Dr. H. W. Briggs, 1026 Jackson St., Wilmington.
DISTRICT OF COLUMBIA: Washington, July 13. Sec., Dr. Edgar P. Copeland, The Rockingham, Washington.
FLORIDA: Jacksonville, June 15-16. Sec., Dr. E. W. Warren, 102 Front St., Palatka.
ILLINOIS: Chicago, June 24-26. Sec., Dr. C. St. Clair Drake, Springfield.
INDIANA: Indianapolis, July 13-15. Sec., Dr. W. T. Gott, 120 State House, Indianapolis.
MAINE: Augusta, July 6-7. Sec., Dr. Frank W. Searle, 776 Congress St., Portland.
MARYLAND: Baltimore, June 21. Sec., Dr. J. McP. Scott, Hagerstown.
MARYLAND: Homeopathic, Baltimore, June 15-16. Sec., Dr. O. N. Duvall, 1817 N. Fulton Ave., Baltimore.
MASSACHUSETTS: Boston, July 13-15. Sec., Dr. Walter P. Bowers, Room 501, No. 1 Beacon St., Boston.
MISSISSIPPI: Jackson, June 15-16. Sec., Dr. E. H. Galloway, Jackson.
MISSOURI: St. Louis, June 21-23. Sec., Dr. J. A. B. Adcock, State House, Jefferson City.
NEW HAMPSHIRE: Concord, July 6-7. Regent, Mr. H. C. Morrison, Concord.
NEW JERSEY: Trenton, June 22-23. Sec., Dr. H. G. Norton, 429 E. State St., Trenton.
NEW MEXICO: Santa Fe, July 12. Sec., Dr. W. E. Kaser, East Las Vegas.
NEW YORK: Albany, Buffalo, New York and Syracuse, June 29-July 2. Mr. Harlan H. Horner, Chief, Examination Division, State Education Bldg., Albany.
NORTH DAKOTA: Grand Forks, July 6-9. Sec., Dr. G. M. Williamson, Grand Forks.
OKLAHOMA: Oklahoma City, July 13. Sec., Dr. Ralph B. Smith, 502 Daniel Bldg., Tulsa.
OREGON: Portland, July 5. Sec., Dr. L. H. Hamilton, Medical Bldg., Portland.
RHODE ISLAND: Providence, July 1. Sec., Dr. Gardner T. Swarts, State House, Providence.
SOUTH DAKOTA: Pierre, July 12. Sec., Dr. Park B. Jenkins, Waubay.
TENNESSEE: Memphis and Nashville, June 25, 26. Sec., Dr. A. B. De Loach, 426 Scimitar Bldg., Memphis.
TEXAS: Austin, June 22-24. Sec., Dr. M. P. McElhannon, Belton.
UTAH: Salt Lake City, July 5. Sec., Dr. G. F. Harding, 407 Templeton Bldg., Salt Lake City.
VERMONT: Burlington, July 1-3. Sec., Dr. W. Scott Nay, Underhill.
VIRGINIA: Richmond, June 22-25. Sec., Dr. J. N. Barney, Fredericksburg.
WASHINGTON: Seattle, July 6. Sec., Dr. G. N. Suttner, Baker Bldg., Walla Walla.
WISCONSIN: Milwaukee, June 29-30—July 1. Sec., Dr. J. M. Beffel, 3200 Clybourn St., Milwaukee.
WYOMING: Laramie, June 28-30. Sec., Dr. H. E. McCollum, Laramie.

UNIVERSITY OF MINNESOTA AND THE MAYO FOUNDATION

Last February it was announced that William J. Mayo and Charles H. Mayo of Rochester, Minn., had set aside $1,500,000 to establish what was called the Mayo Foundation for Medical Education and Research and had offered to turn this foundation over to the University of Minnesota. A special committee was appointed by the board of regents of the university to make a thorough investigation of the matter and that committee has reported. The following is an abstract of the report:

ABSTRACT OF REPORT

The committee recommends that for a trial period of six years the university establish a part of its graduate work at Rochester, appoint investigators and teachers, set standards of work and graduation, and accept the maintenance funds, quarters, equipment and other opportunities offered by the Mayo foundation.

The committee further recommends that in case the experiment proves successful the work be continued on a permanent basis under these conditions: (1) complete control by the regents of endowment funds and income; (2) appointment by the regents of all directors, teachers, investigators and others connected with the Mayo foundation; (3) the maintenance at Rochester, Minn., of quarters and administration for the foundation work, with right to make from the endowment income appropriations for medical investigation anywhere inside or outside the state.

It is believed that through this policy the university would fulfil a public duty by: (*a*) providing notable facilities for advanced medical training; (*b*) standardizing and controlling in the public interest the preparation of medical specialists; (*c*) fostering medical research not only on a state but on a national basis; (*d*) furthering the growth of graduate work on the university campus, and (*e*) increasing the efficiency of undergraduate teaching at the university.

The committee presented the following educational considerations as the basis of its recommendations:

GRADUATE WORK IN MEDICINE

There seems to be uncertainty in many minds as to just what is meant by graduate work in medicine. So-called "postgraduate" courses in "polyclinic" schools are brief courses for busy practitioners who desire to keep "up to date," but these courses do not approach true graduate work in seriousness, or length of time or advanced character of instruction.

A graduate student in chemistry, history or any other branch of learning spends from two to five years in thorough training, and devotes a good part of his time to original investigation of a chosen topic. Graduate instruction in this sense is being extended to medicine.

Unlike undergraduate teaching, graduate instruction is not given in classes or in a fixed course of study. The essential point of the training is its individual character. Opportunities for such work are measured by the number and control of properly selected cases, by the character of the teachers, and by the character of the organization conducting the work.

In graduate work of any kind research plays a large part. Originality and ability to conduct investigation must be demonstrated.

The studies of a medical graduate in any given specialty should consist of: (1) Further work in the fundamental sciences of anatomy, physiology, etc.; (2) adequate practice in the technical procedures of diagnosis and treatment; (3) a thorough acquaintance with the literature of the specialty and related branches; (4) original investigation relating to his specialty.

Medical knowledge has become too extensive for any one to become a master of all of it. Such knowledge is still being increased by the discovery of new facts coming from systematic study by trained investigators. Investigators are trained by doing original work under critical and inspired leadership. This is the prime function of the graduate school. Again, adequate training must be provided for the men who desire to follow teaching as a career.

Heretofore, so far as special training is concerned, the best specialists have been, by force of circumstances, self-made. Success has depended more on native ability than on systematic training.

Not only does the profession lack standards, but the public has no way to judge as to the competency of special practitioners. The establishing of authoritative standards is needed for the protection of the public.

It is the duty of the university to extend the bounds of knowledge in this difficult field of medicine, and to do so, trained investigators are necessary. Again, it is the duty of the university to standardize graduate medical instruction.

The first duty of the medical school is to provide a thorough undergraduate course for the training of general practitioners, and as a basis for advanced work. Such a course demands laboratories, clinics and a highly trained staff. The provision of a first-rank undergraduate course involves a margin of leadership and facilities which can be used for a limited amount of graduate work also, and this cannot be developed beyond a certain point without great expense.

COST OF MEDICAL EDUCATION AT MINNESOTA

The medical plant of the University of Minnesota has already cost approximately $1,100,000. The clinical facilities have cost $300,000. The present annual budget of the medical school is $150,000, which includes a considerable expense for teaching done for other divisions of the university.

The cost of hospital and dispensary maintenance is $80,000 per annum. At least four-fifths of this amount is chargeable to the care of the indigent sick of the state, but by the legislature and in the public mind this is regarded as a part of the cost of medical education. On this basis the present total budget of medical education is $230,000 per annum.

The administrative board of the medical school have estimated that to round out the medical plant and double the present hospital facilities will cost for buildings $600,000 and for increased maintenance $60,000. To provide also for instruction and investigation a further annual cost of $40,000, which will bring the totals for plant and annual maintenance to $1,700,000 and $330,000, respectively.

It is evident that there must be a limit to the amount of state support. The extension of hospital facilities; the building and support of pavilions for women and for children, and the housing of the school for nurses ought to appeal to individual donors. If therefore the university is to provide graduate instruction and research for Minnesota and the Northwest, it must utilize all available facilities which can be controlled and standardized. But none of these latter can be regarded as substitutes for a university-controlled hospital and laboratory system for undergraduate instruction.

USE OF PRIVATE AND MUNICIPAL HOSPITALS

Municipal and private hospitals can be used in both undergraduate and graduate medical education to a limited extent and better arrangements may be made as time goes on. In the twin cities, however, the development of adequate facilities for clinical instruction of the advanced type in the municipal hospitals appears impracticable for some time to come. In private hospitals the work is rarely coordinated under one organization, the patients being considered as the individual cases of particular doctors. There is nothing which renders the private pay patient any less valuable for study than the charity patient, and in graduate teaching, where the student is a qualified and legalized physician and is the assistant of the teacher, there seems no reason why private patients should not be used. All the laboratory branches have conducted graduate work for several years. The work is standardized as a regular part of the graduate school of the university.

GRADUATE WORK AT MINNEAPOLIS AND ROCHESTER

In the clinical departments this type of work has recently been undertaken. All departments are now offering graduate work excepting those of dermatology and genito-urinary diseases. Six "teaching fellows" with aggregate stipends of $3,000, are giving their full time to the university. They do a small amount of teaching but devote the larger share of their energies to advanced study and research. There are two "graduate scholars" exempt from tuition fees, who devote half their time to graduate work.

The total number of graduate students in the medical school is twenty-one, of whom nineteen are candidates for the degree of M.S., Ph.D., or D.Sc.

Graduate work in the medical school is of importance not only for itself but also because of its stimulating effect on the faculty. It counteracts the deadening effect of undergraduate work, with its yearly repetition of elementary courses. It adds interest to teaching and keeps the faculty in active contact with research. Moreover, by such work the demand of the public for trained service is being met.

The Mayo foundation has well equipped laboratories in charge of full-time and thoroughly competent men. It has adequate library, museum, autopsy and editorial facilities, and it has at its disposal a wide range and large amount of clinical material in most respects representative. Although the patients are not charity patients the arrangements are admirable for affording graduate students the fullest advantages. They act as assistants to the permanent heads of clinical and laboratory services and are shifted from service to service so as to get full experience in all branches related to their major interest.

Under these conditions thirty salaried fellows and six voluntary workers are engaged in graduate medical study of a high degree of excellence. These men are qualified for enrolment in the graduate school of the university.

The staff of the foundation is composed of high-grade men. Several are recognized leaders in their special fields. Many of the staff have had teaching experience, and the group as a whole is scientifically and professionally on a par with medical facilities in the larger universities.

There is in Rochester a large amount of material in surgery, surgical pathology, gastro-intestinal diseases, goiter and Roentgen ray. There is also a large collection of clinical records systematically kept and so cross referenced as to be available for statistical studies. When it is realized that conclusions as to the causes and relations of diseased conditions can be drawn only by the comparison of large numbers of cases, the value of these records for medical research becomes apparent.

ADVANTAGES OF THE AFFILIATION

The facilities of the two institutions in large measure supplement each other. For all the specialties the university can furnish training in anatomy, physiology and pharmacology not available at Rochester. Thus the scientific foundation of the graduate students in both places would be assured. These students would constitute one body under the educational guidance of the dean of the graduate school. Such guidance is essential and cannot be supplied outside the graduate school of a university.

If the graduate work at Rochester passes to the control of the university, medical education in Minnesota will become a unit under the state university.

Advantageous cooperation between the clinical departments in the two places, with increased efficiency as a result of united facilities, are numerous. The following may be mentioned: In medicine the student would get at the university training in acute diseases and other conditions ordinarily found in the medical wards. This would be supplemented by experience at Rochester in the diagnosis and treatment of diseases not so frequently found in the University Hospital. The student desiring to specialize in women's diseases would be trained in obstetrics at the university and in gynecology both at the university and at Rochester. The training afforded in orthopedics at the hospital for the crippled and deformed at Phalen Park, under supervision of members of the university faculty, would be supplemented by the study of a somewhat different class of cases at Rochester. This is true in varying degree in all branches, for the quantity and kind of cases vary in the two clinics.

Educational efficiency would be improved by a freer exchange of staff members between the two institutions. Research workers could combine the appropriate materials of both places. The reciprocal stimulus of generous rivalry would be of value to both groups.

THE UNIVERSITY TO CONTROL ALL MEDICAL EDUCATION

All forms of medical education in Minnesota, including graduate medical instruction, should be centralized in the university. The university should enter this new movement with conviction, extend to it the educational leadership which is needed and see to it that a university diploma shall be the recognized mark of proficiency in the medical specialties. It is reasonable to expect that the interchange of work between Minneapolis and Rochester, the possibilities of research and the presence of graduate students in both places would make it easier for the university to attract to its staff the best men from all parts of the country.

The effect on the undergraduate student body would be good. Ideals of research would be constantly before them. Able and ambitious students would be attracted to the undergraduate course because, while the graduate school is open to all medical graduates, those who come up through the university's own course of study and who establish high records would be most directly in line for fellowships and for laboratory appointments.

The extension of graduate teaching proposed would enable the university to serve the state by insuring more expert medical service to its people, by furthering research into cause, cure and prevention of disease, by protecting the public by a system of education, examinations, diplomas and degrees for specialists against incompetence and exploitation. The committee recommends, therefore, that the university establish graduate work at Rochester, Minn.; that such work be directed by the graduate school through its dean and the medical school graduate committee; that professors and other teachers be appointed on the nomination of the same committee, to carry on graduate teaching and research at Rochester, and that the offer of clinical and other facilities and gifts made by the Mayo foundation be accepted.

ABSTRACT OF FORMAL AGREEMENT

1. The agreement is made between William J. Mayo and Charles H. Mayo as Founders; the Mayo Foundation; Burt W. Eaton, George W. Granger and Harry J. Harwick, Trustees of the $1,500,000; and the University. It sets forth copies of the articles of the Foundation and of the two trust agreements and asserts or provides:

2. That the Mayos and their associates have entered into an agreement with the Foundation for the period of six years after Sept. 1, 1915, to pay all moneys and provide all subjects, facilities and material necessary to enable the Foundation to carry out its agreement with the University.

3. That the Board of Regents is by law required to manage the University and appoint its professors and employees and

fix their salaries and may accept in trust gifts and bequests on the terms and conditions on which they are granted.

4. That the University is maintaining a medical school and is carrying on graduate medical and surgical instruction and has determined to increase its faculty, secure additional facilities, sites and material, appoint additional professors and assistants and carry on part of the work of the school of medicine at Rochester.

5. That the Foundation gives and grants to the University free of charge the right to use for medical and surgical education and research space and rooms and equipment in a certain building in Rochester, together with all clinical and other materials and opportunities for graduate medical and surgical work available at the Mayo Clinic, St. Mary's Hospital, the Kahler Sanatorium and the Colonial Sanatorium in Rochester, for a period of six years after Sept. 1, 1915.

6. That the Foundation also agrees during that period to pay all salaries fixed by the Board of Regents and payable to professors, assistant professors and instructors appointed by the Board.

7. That until Sept. 1, 1921, the net income of each of the trust funds shall remain in the hands of the Trustees as an added increment to the principal of the funds.

8. That from and after Sept. 1, 1921, the principal of the funds and all accumulations to that date shall be turned over to and become the property of the University.

9. That the funds and the income therefrom are granted in trust to be used by the University as follows:

(a) The principal shall always be kept intact by the Board of Regents and be invested in suitable securities.

(b) The income from the funds shall be used for the purpose of graduate medical and surgical instruction and research carried on under the direction of the Board of Regents at Rochester, Minn., with the understanding that appropriations may be made for carrying on medical investigations anywhere within or outside of the state of Minnesota.

10. That the agreement may be terminated at any time on or before Sept. 1, 1921, on one year's notice given by either of the parties to the other, subject to the cooperation of all parties to discharge to the satisfaction of the University outstanding obligations to graduate students.

11. That the University accepts the gifts and grants, and obligates itself annually to furnish to the Foundation until Sept. 1, 1921, a budget stating the needs of this branch of the work at Rochester.

Massachusetts March Report

Dr. Walter P. Bowers, secretary of the Massachusetts Board of Registration in Medicine, reports the oral, practical and written examination held at Boston, March 9-11, 1915. The total number of subjects examined in was 13; total number of questions asked, 70; percentage required to pass, 75. The total number of candidates examined was 68, of whom 40 passed, including 8 nongraduates and 6 osteopaths, and 28 failed, including 15 nongraduates and 2 osteopaths. The following colleges were represented:

College	Year Grad.	Per Cent.
PASSED		
Chicago College of Medicine and Surgery	(1915)	76.1
Medical School of Maine	(1914)	75
College of Physicians and Surgeons, Baltimore	(1914)	78.6
Johns Hopkins University	(1913)	76.1
College of Phys. and Surgs., Boston	(1912) 75; (1914)	78.2
Harvard Univ.	(1909) 75.2; (1913) 80.2, 83.2; (1914) 78.4; (1915)	79.1
Tufts Coll. Med. School	(1913) 81.2; (1914) 75, 75.2, 77.1, 78.2,	78.8
Univ. of Mich., Dept. of Med. and Surg.	(1894) 75; (1912)	75.9
Dartmouth Medical School	(1900)	76.1
Albany Medical College	(1914)	80.7
University of the City of New York	(1880)	75
Jefferson Medical College	(1914)	80
University of Vermont	(1914)	77
University College of Medicine, Richmond	(1910)	78.2
McGill University	(1875)	75
Nongraduates	75, 75, 75, 75, 76.4, 76.5, 78.1,	79.5
FAILED		
Georgetown University	(1912)	71.9
Baltimore Medical College	(1911)	71.8
College of Physicians and Surgeons, Baltimore	(1914)	73.3
Maryland Medical College	(1913) 56.1,	71.3
Coll. of Phys. and Surgs., Boston	(1907) 64.8; (1911) 71.6; (1913)	62
Tufts College Medical School	(1912)	67.2
Dartmouth Medical School	(1884)	50.2
University of the South	(1902)	65.5
Nongraduates	40.2, 50.4, 62.1, 65.7, 66.7, 67.2, 67.7, 69, 69.7, 70.1, 70.9, 72.2, 72.3, 73,	73.6

Book Notices

DETERMINATION OF SEX. By L. Doncaster, Sc.D. Cloth. Price, $2. Pp. 172, with 22 illustrations. New York: G. P. Putnam's Sons, 1914.

Those who wish a clear, critical and conservative exposition of the present scientific status of this ancient, yet ever new problem cannot do better than read this little book. The author is a well-known investigator in the field of the inheritance and determination of sex, and he therefore brings to the general treatment of the subject the sureness of the expert. At the same time he avoids dogmatism. The treatment is confined to the problems of sex determination in animals and man, and the author has "striven to avoid as far as possible the use of technicalities which might embarrass the untrained reader." The general argument will be everywhere intelligible to any well-educated person, even though certain special illustrative cases may require very close study. The book is an excellent antidote to some sensational and unscientific books.

As the author points out, there is no single character of living things, apart from the fundamental properties of life itself, so widely distributed as sex. Yet of its fundamental significance and function we have no real knowledge. It is commonly associated with reproduction, yet we may have reproduction without sex, and even sexual differentiation that is not associated with reproduction. The origin and significance of sex are utterly obscure problems in which no real recent progress has been made. On the other hand, the problem of sex determination, that is, of the causes which lead to the origin of individuals of one or the other sex, has advanced in many notable ways in recent years, so that it may be stated that certain of the causes are now well understood in many cases. The author does well in emphasizing the fact that the term "determination of sex" is used in two senses, namely, in the sense of ascertaining the causes of sexual differentiation, and in the sense of controlling the production of either sex at will. It is obvious that the causes when ascertained may turn out to be uncontrollable; indeed, much of the most important recent work leads to a decidedly pessimistic outlook for eventual control of sex production. But the author does not allow himself to be entirely convinced in this direction, and comes to the final conclusion that we may "regard the control of sex in man as an achievement not entirely impossible of realization." The facts which show that sex is determined by the germ cells either before or at the time of their union naturally receive the major consideration, because these facts constitute the newest and most precise data we have on the subject. There is presented evidence as to the stage at which sex is determined, the study of the inheritance of sex-limited characters, the problems of the inheritance of secondary sexual characters, the extraordinary facts concerning chromosome differences between male and female individuals, and the differentiation of the germ cells in such cases into male-determining and female-determining, all of which indicate an early determination of sex before the onset of embryonic development. Against these are set the data concerning atypical sex ratios, whether occurring in nature or under experiment, which seem to indicate an influence of external factors in sex determination. The collective data are then considered in a chapter in which the various theories are discussed in an admirable spirit, and the author's position is stated. The determination of sex in man comes up for separate consideration in the concluding chapter.

CHIRURGISCHE OPERATIONSLEHRE FÜR STUDIERENDE UND AERZTE. Von Prof. Dr. Friedrich Pels Leusden, ord. Prof. der Chirurgie. Second Edition. Paper. Price, 20 marks. Pp. 788 with 760 illustrations. Berlin: Urban and Schwarzenberg, 915.

This work was written chiefly for students and practitioners, but the author thinks the specialist as well will find in it something of value. Considerable new matter has been added in this edition, which is an improvement on the first; but this edition is open to the same criticisms which were made against the first, namely, it is distinctly a German work, and little that has originated outside of that

country finds mention. The author recognizes this, but declares that he has not allowed patriotism to influence him. He then says: "I have taken great pains impartially to give authors due credit, but who will boast to so master even the entire literature of one's own country that an error might not slip in? That German literature is best known to me is self-evident, and therefore Germans in a German treatise have fared the best." As a partial excuse for errors in this direction, the author naively says, "If I have presented anything that is good which I have attributed to a wrong author I am sorry, but it doesn't change any that which is good." Many difficult and complicated operations remain unillustrated for the reason, as the author states, that "the beginner does not yet need them and the experienced operator can do without them." The same might well be said of most operations, but that principle does not contribute to the completeness of a work.

Society Proceedings

COMING MEETINGS

American Medical Association, San Francisco, June 21-25.

American Assn. of Med. Milk Commissions, San Francisco, June 17-19.
American Academy of Medicine, San Francisco, June 25-28.
American Association of Anesthetists, San Francisco, June 21.
American Climatological and Clin. Association, San Francisco, June 18-19.
American Laryn., Rhin. and Otol. Society, Chicago, June 15-16.
American Ophthalmological Society, New London, Conn., July 6-7.
American Society of Tropical Medicine, San Francisco, June 14-16.
Arizona Medical Association, Prescott, June 17-18.
Montana State Medical Association, Bozeman, July 14-15.
Nat'l Assn. for the Study and Prev. of Tuberculosis, Seattle, June 14-16.
Nevada State Medical Association, Reno, June 17-19.
New Jersey Medical Society, Spring Lake, June 22-24.
North Carolina State Medical Society, Greensboro, June 16.
Washington State Medical Association, Tacoma, July 20-22.

AMERICAN NEUROLOGICAL ASSOCIATION

Forty-First Annual Meeting, held at New York, May 6-8, 1915

(Concluded from page 1937)

Paralytic and Other Persistent Sequelae of Migraine

Dr. J. Ramsay Hunt, New York: In the vast majority of cases, a tendency to migraine entails no more serious consequences than the recurrence of periodic headaches of varying degrees of severity. Headaches of this character are often associated with curious transitory focal symptoms, as scotoma, hemianopsia, hemiparesis and hemiparesthesia. More rarely, evanescent aphasic attacks and mental disturbances accompany the attack. These focal manifestations are purely functional in nature, and disappear promptly with the subsidence of the other symptoms of the paroxysm. They are generally regarded as manifestations of vascular spasm and this theory is in harmony with their temporary and evanescent nature. In rare cases permanent and often serious consequences ensue. The paralytic and other permanent complications of migraine may appear in various forms as ocular palsies (migraine ophthalmoplegique), organic hemiplegia with aphasia, hemianopsia and optic atrophy. A recurrent facial paralysis has also been ascribed to migraine (facioplegic migraine), and presumably of the same nature and pathogenesis as the ophthalmoplegic of this affection. Migraine, which is usually so harmless, may on occasion be the cause of serious and permanent sequelae. Of great importance from the standpoint of the permanent paralytic sequelae, such as are described in this paper, is the question of the influence of recurring attacks of migraine on an already existing arterial sclerosis. It is very evident that in the presence of cerebral arteriosclerosis, however slight, crises of hemicrania are much more likely to be the cause of vascular accidents, such as thrombosis and hemorrhage, than would be the case in perfectly normal vessels. In the recognition of migraine paralysis the essential points to be considered are: (1) the establishment of a definite clinical history of genuine or idiopathic migraine, and (2) the direct relationship of the paralysis to the migraine paroxysm. As many attacks of hemicrania arise during the day, terminating in a heavy sleep, the presence of paralysis in the morning on awakening would be strong presumptive evidence of an etiologic relationship to migraine. Special emphasis should be placed on the presence of what may be termed "warning symptoms," that is, the recurrence of transient ptosis, diplopia, hemianopsia, hemiparesis, aphasia and jacksonian seizures. A permanent damage to nerve structure resulting from an attack of migraine is fortunately a rare sequel. In this group of accidents, the ocular palsies rank first in importance, because of their relative frequency (migraine ophthalmoplegique). Next in importance among the cranial nerve complications is involvement of the optic nerve resulting from thrombotic occlusion of the central artery of the retina and possibly the retrobulbar neuritis. The graver paralytic complications are naturally those affecting the brain itself, and these are the result of occlusion of the cerebral vessels with consequent encephalomalacia. Such lesions have been observed in the distribution of the sylvian artery causing hemiplegia, hemianesthesia and aphasia, and in the distribution of the posterior cerebral artery when homonymous hemianopsia is the characteristic symptom. While thrombosis is the usual lesion in such cases, it is not improbable that rupture of the vessel also occurs. There are two other groups of cases which should be considered from the standpoint of permanent vascular lesions, namely, the epilepsy which is so often associated with migraine, and the vertigo permanens. Both of these conditions are usually regarded as merely functional substitutions or alternations of the neurosis itself, in other words, as a kind of migraine equivalent. The possibility of a permanent vascular focus resulting from migraine must be considered as a possible etiologic factor in the presence either of epilepsy or of persistent vertigo.

DISCUSSION

Dr. Joseph Collins, New York: There is one feature of these cases that Dr. Hunt has not mentioned, which I consider to be of very great importance, and that is the syphilitic feature. In a series of 100 cases of syphilitic disorder of the nervous system coming in succession, I found two cases of typical migraine, one of them associated with ophthalmoplegia in which the evidence of a syphilitic origin was found in the blood and in the cerebrospinal fluid. I have come now to the conclusion that it is well in the majority of cases of migraine, practically in all cases in which there is paralysis of any sort, to submit them to the laboratory tests.

Dr. L. F. Barker, Baltimore: I can confirm Dr. Hunt's observations of hemianopsia with migraine. I had two cases, one in a lady in middle life. In both of these instances the hemianopsia was temporary, though complete at the time. It passed off and I have not heard from the patients since. In view of what Dr. Hunt has said, it is possible that they may later develop hemianopsia. I have made it a routine practice to make serologic examinations in all neurologic and medical cases. In neither of these cases, however, was a positive Wassermann present, and in my own experience, while migraine and lues do coexist sometimes, it is not common. I have wondered as to the nature of this temporary hemianopsia, and think of a possible temporary lesion in the chiasm and also of a spasm of the occipital artery supplying around the calcarine fissure.

Dr. William G. Spiller, Philadelphia: Some years ago Dr. de Schweinitz sent me a patient who had two attacks of ophthalmoplegia. He had had migraine over many years. His parents had had migraine. Recently I saw a patient who had had two attacks of transitory ophthalmoplegia. One patient died two or three years later of an apoplectic stroke. I have seen two cases of hemianopsia with migraine.

Dr. Alfred Gordon, Philadelphia: Several years ago I had a physician under my charge for periodic attacks of migraine. That man comes from a migraine family. After an attack of migraine I found him hemiplegic on the right side, with astereognosis of the right side and motor aphasia. Not all the symptoms were marked, but they were sufficiently pronounced to observe. He made a complete recovery and is well up to the present time.

DR. P. C. KNAPP, Boston: There is one form of involvement of the cranial nerves of which Dr. Hunt has not spoken, namely, the anesthesias occurring in the distribution of the fifth nerve in connection with attacks of migraine. In regard to the ophthalmoplegic migraines, there are a few interesting points to which Dr. Hunt has not referred. In the great majority of them the ophthalmoplegia is an incidental occurrence. In a very few instances, there is a fairly regular occurrence of the transitory ophthalmoplegia with each attack of the migraine, but it must be borne in mind that even these cases of ophthalmoplegia of short duration occurring as time goes on become more and more permanent. I have seen two cases. Both of the cases have been permanent. One of them I saw a year or two ago, about ten years after the first attack of hemianopsia, coming on with the migraine, and the second one has continued now seven or eight years.

DR. N. E. BRILL, New York: Only recently a nurse in the training school who had had occasional attacks of migraine for a number of years developed a hemiplegia affecting the right arm and leg without any aphasia and without any demonstrable sensory disturbances. Dr. B. Sachs would remember the case, as I asked him to see it at the same time. The hemiplegia disappeared in three days, leaving the girl rather exhausted. She recovered rapidly, and has had an attack of migraine since but no hemiplegia.

DR. J. RAMSAY HUNT, New York: In regard to the pathology of transient and permanent attacks, I myself believe they have the same pathologic basis. They are essentially a vascular spasm. Dr. Collins' suggestion of the possibility of syphilis in migraine is a very important one. As far as possible I have excluded syphilis and regard the cases as essential, or idiopathic, migraine.

Case of Landry's Paralysis: Report on the Histopathological Findings

DR. E. D. FISHER, New York: The patient, a boy of 15, suddenly became ill, complaining of weakness in the lower extremities. After admission to the hospital, his condition became progressively worse until a complete paraplegia of the lower extremities developed. This was of the flaccid type. Within seven days the upper extremities became involved in the same manner. The muscles of all limbs became atrophied. Reaction of degeneration was present in the lower, and marked quantitative and qualitative electrical changes in the upper extremities and shoulder muscles. There were also partial dissociation of touch, pain and temperature sense in these extremities. Subjective sensory disturbances were a constant accompaniment. Toward the end of his illness, most of the cranial nerves became involved. The bacteriologic examination of the blood and spinal fluid was negative. The cytologic examination of the spinal fluid was negative. A slight rise in temperature marked the entire course of the disease. The patient died of asphyxiation after an illness of six weeks. The necropsy was performed by Dr. John H. Larkin, and specimens of the cord and brain stem and sciatic nerve were prepared by him for examination. The histologic examination revealed changes throughout those tissues. The spinal nerve roots and the sciatic show marked parenchymatous and interstitial changes with an infiltration in the perivascular and perineural lymph spaces of leukocytes, plasma cells and some gitter cells. The cells of the posterior horns at all levels of the cord show a central chromatolysis, especially marked in the cells of Clarke's column. Such type of cell degeneration is also evident throughout the bulb and pons. The cells of the motor neurons show in addition two other types of degeneration, namely, a swelling and coalescence of the Nissl bodies, a tygriosis with eccentric nuclei and staining very deeply and in some places an extensive cell vacuolization. Around these there are to be seen satellite cells which at times dip into the cell body. Their prolongations are visible and are retaining to some extent meshes of chromophilic bodies. The vessels and capillaries are engorged throughout, and at times are seen to burst, producing hemorrhage into the neighboring tissues. Frequently we encounter capillary aneurysms and thrombi. Hemorrhages, rather minute and to all appearance recent, are present at all levels of the cord and brain stem both in the gray and white matter. A marked glia proliferation is a feature throughout. At some levels of the cord an ependymitis of the central canal is present. In a word, we are dealing here with neuritic as well as a cellular involvement, the former being more pronounced. The cell changes of the central chromatolysis type are of a reactionary character owing to remote influences in their neuraxon, while those of the tygriosis type speak for a primary cell involvement as a result of an inflammatory condition around and in the cells. The clinical aspect and the pathologic changes that we find in cases of an acute ascending paralysis of the type of Landry point to an infectious process. Our case would show that both the infectious agent and its toxin are responsible for these changes. Which of the two are predominating is an open question. The predominating type of pathologic changes in Landry's paralysis is that characterized by inflammatory myelitic changes with very slight, if any, nerve changes. For this reason, recent investigators are inclined to regard this disease as poliomyelitis. But in this affection we deal with a distinct etiologic factor and are able to reproduce the characteristic pathologic picture. In Landry's paralysis, divers kinds of cocci and bacilli are found, and the pathologic picture is not uniform. We may conclude that the clinical picture is the criterion of Landry's paralysis, that pathologically there may be a purely cellular, or neuritic only or a neuricellular involvement, and that the time element is no criterion of the disease, since it may last from eight days to eight weeks.

DISCUSSION

DR. CARL D. CAMP, Ann Arbor, Mich.: Some time ago I reported a case of acute unilateral ascending paralysis which came to necropsy in which were found in the peripheral nerves very much the same degenerative changes as are described here. At that time I also noted the abnormality of the anterior horn cells and regarded it as a phenomenon secondary to the changes in the nerve.

DR. ISRAEL STRAUSS, New York: Of course we all know cases of Landry's paralysis in which no pathologic lesion is discovered. At first when this disease was described we did not have at our disposal the technic described today. Since those cases were described, other cases have been described, and present distinct clinical features which render it possible that there can be acute ascending paralysis without very much in the way of microscopic lesion.

Meningitis Sympathica

DR. I. STRAUSS, New York: Meningitis sympathica is the name given to those changes which occur in the cerebrospinal fluid when an inflammation is present in the neighborhood of the meninges. The pressure of the fluid is greatly increased, and may reach as high as 400 mm. There is an increase in the cellular elements, the cells generally being polynuclear leukocytes. The fluid is sterile. There may be no symptoms of meningitis, but very often there is considerable neck rigidity, and Kernig's symptom is present in varying intensity. One of the most frequent causes of the condition is brain abscess, especially where there has been a previous otitis. It may also be present in patients in whom there is an inflammation of the accessory sinuses or of the structures adjacent to them. We frequently encounter intracranial inflammatory conditions in which there is no evidence of meningeal irritation; but when meningitis sympathica is present it aids us both in the diagnosis and the treatment.

Case of Central and Peripheral Neurofibromatosis (von Recklinghausen's Disease)

DR. PETER BASSOE and DR. FRANK NUZUM, Chicago: The case was that of a boy 15 years old at death. From the age of 4 years he had attacks once a year, lasting two weeks to three months, of pain in the back near the right scapula. Dragging of left foot was noted after the first attack. At 10 years he had eight eye muscle operations. He had a lump on the left side of the neck noted three years before death, and a pelvic tumor three months before death. Findings on exami-

nation suggested basal brain tumor and cord tumor. Several subcutaneous nodules led to a correct clinical diagnosis. Necropsy showed large neurofibromas in both cerebellopontile angles, large tumor of the cauda equina, numerous small tumors on various cranial and spinal nerves, and also tumors on nerve roots, in places invading the cord. There was a large tumor outside the rectum.

Abderhalden Reactions and Defective Mental and Physical States

DR. S. D. W. LUDLUM and DR. E. P. CORSON WHITE, Philadelphia: In the blood of a thymectomized dog we obtained reactions to testis and pancreas, just as had previously been done in patients who had physiologic symptoms of thymectomy. Following this we saw three cases of backwardness in children in which the symptoms were those of lymphatism. These cases reacted to thymus. Results of treatment of these cases with pituitary extract were phenomenal. A girl of 5 years showing gigantism reacted to pituitary. The symptoms were controlled by thyroid extract. We have had ten cases of a hypomaniac state in adults pointing to hyperpituitarism rapidly controlled by the opposite hormone. A case of infantilism which reacted to thymus started to grow when put on pituitary extract.

DISCUSSION

DR. HENRY A. COTTON, Trenton, N. J.: This is the most important problem before the psychiatrist. The question of the influence of the ductless gland or the glands of internal secretion on mental conditions, probably more especially in dementia praecox, seems to be evident today. Following out Cushing's ideas on hypopituitarism, we examined a number of cases. We examined the blood pressure, sugar tolerance, the polyuria, and all of these cases have shown one thing, that there was evidence that the pituitary gland was at fault. There is probably a group of cases in which the thymus is affected, another in which the pituitary is affected and we know the effect the suprarenal and the other glands have. As these studies are developing we can at least look to some definite facts to be gotten out of this work to indicate a proper theory.

AMERICAN GYNECOLOGICAL SOCIETY

Fortieth Annual Meeting, held at White Sulphur Springs, W. Va., May 18-20, 1915

The President, DR. THOMAS J. WATKINS, in the Chair

Present Status of Ovarian Transplantation

DR. FRANKLIN H. MARTIN, Chicago: Subcutaneous transplantation of ovarian tissue does not increase the risk of operation. In the majority of patients the graft will persist for a time. In my cases it is still present after twenty-seven months, eighteen months, and in three others more than a year. In some patients it appears to functionate, as shown by the apparent development of graafian follicles, by variation in size and tenderness, and by menstruation when the uterus remains. The presence of one ovary in the pelvis does not necessarily interfere with the success of the graft. Those patients in whom ovarian tissue has been grafted seem to have less discomfort from the premature menopause.

What Is the Fate of the Ovaries Left In Situ After Hysterectomy?

DR. HIRAM N. VINEBERG, New York: Clinically, it has been found that the freedom from the climacteric syndrome in hysterectomized women, in whom the ovaries have been conserved, is only relative to that which obtains in the same class of women in whom the ovaries have been removed. A generous estimate would be 20 per cent. in favor of the former. To obtain the benefits claimed by the advocates of conservation, the ovaries should be retained at all ages and not limited to those under 40 years, as is done by most of them, inasmuch as it has been shown that of the women who suffer most severely from the artificial menopause, 46 per cent. were only 45 and over. Subsequent disease of the conserved ovary does occur in some cases, the number no doubt being much larger than would be inferred from the records found in the literature. I am of the opinion that the doubtful clinical advantages accruing from retaining the ovaries in hysterectomy are more than counterbalanced by the risk to which the patient is subjected from subsequent disease and adhesions of the conserved ovaries. I would, therefore, not retain the ovaries in any case of hysterectomy, unless I could leave enough of the lower segment of the uterus with its endometrium to insure the function of menstruation, for in my experience the knowledge imparted to the woman that her ovaries have not been removed has but little significance or moral effect when she learns that she will no longer menstruate.

DISCUSSION

DR. FRANK F. SIMPSON, Pittsburgh: The first instance of transplanted ovarian tissue was one that encouraged us in this line of work. The patient, a young woman of considerable importance in the community, in the thirties, had a perforated appendix, with drainage for general peritonitis. The appendix was removed. Later there were adhesions about both adnexa, which were treated. Six operations were done by leading general surgeons of New York. The young woman was a confirmed invalid. She suffered intensely at the menstrual periods. She, her father and mother insisted on immediate removal of the uterus and adnexa. Every effort was made to relieve the suffering. At the end of a year she suffered as much as she did at the beginning. I removed the pelvic structures. I did not transplant the ovary into the abdominal cavity, thinking it would cause serious trouble, and that disintegration of the ovarian tissue or infection might readily cause serious damage requiring a second abdominal operation. So it occurred to me that to transplant it beneath the skin might be successful. We used the adnexa, transplanted about half of the ovary, it lived, and today it is quite the size it was when transplanted. On a number of occasions I felt the ovary, and I believe I felt the graafian follicles. In that young woman the functional result was good. Instead of being a confirmed invalid and lying in bed, she is about, is vigorous, and practically not harmed at all by the disagreeable phenomena of the precipitated menopause.

DR. JOHN O. POLAK, Brooklyn: I have four unreported cases of transplantation of the ovary. In three of them the entire ovary was transplanted in a pocket in the prevesical space. Two of these have caused no trouble so far as the ovarian graft is concerned. This graft has seemed to have no effect on the symptoms of the menopause. A third has become cystic. She is the only woman of these three who has had relief from the symptoms of the menopause. My fourth case was a graft of the ovary into the cornu of the uterus at the point of excision of the tubes. This patient menstruated for nine months, and then menstruation ceased. She then developed all the symptoms of the postclimacteric with considerable severity, but gradually they have passed away.

DR. J. WESLEY BOVÉE, Washington, D. C.: The ovary floats freely in the peritoneal cavity. An ovary that becomes encased by adhesions, and not necessarily by marked infection, begins to undergo sclerocystic degeneration. When we transplant these ovaries we cover them entirely with tissue, and they will undergo degeneration. I do not believe that the results are good or will be good so long as this plan is followed. When we resort to transplantation of ovarian tissue, it must be done in such a way as to give freedom to such tissue.

DR. HIRAM N. VINEBERG, New York City: I have had two cases of autotransplantation of the ovary, taking a small wedge-shaped piece of the ovary and inserting it into the lower abdominal wound, leaving it in between the fat and the skin. In one of these cases the operation was done nine months ago and in the other about six months ago. There has been absolutely no difference in the healing of the wound. So far as one can tell from frequent examination since then, one could not tell that a transplantation had been done.

DR. JOHN J. CLARK, Philadelphia: I have endeavored to expose the cortex, open the ovary, pull it open as one would a kidney, and allow the vascular portion to come into direct contact with the peritoneum, which I have utilized, and not the subcuticular tissue, as Dr. Simpson has done. Thus far my experience has not been particularly satisfactory.

DR. HERMAN J. BOLDT, New York: In view of the fact that there are undoubtedly instances in which the symptoms of the menopause are at least ameliorated if a seemingly normal gland is conserved either by ordinary conservation or by transplantation, I want to continue that line of work. On the other hand, I can only say that in those instances in which conservatism has been practiced, I have had the same disagreeable features to contend with that others have had. I recall two instances in which it became necessary for me to reopen the abdomen and to remove an ovarian cyst from the ovary which had been retained. I cannot recall any instance in which the removal of cysts has been more difficult than in those two cases. However, as I have said, there are instances in which the symptoms of the menopause are at least ameliorated and where they are entirely absent.

DR. J. RIDDLE GOFFE, New York: About twelve years ago I made my first adventure into this field of work. It was on a young woman whose tubes were absolutely destroyed by disease. She was anxious to have children. I removed both tubes and one ovary; then I slit open widely the whole fundus of the uterus, being careful to preserve the mucosa of the salpinx in my obliterating operation, and to retain as far as possible the lymphatics and the arterial nutrition of the ovary. Without splitting the ovary, I turned it right around and hung it free in the uterine cavity. The patient had a slight discharge of blood at the regular time of menstruation once; then she escaped from my observation, and I have not been able to get any further information in regard to the case.

DR. JOSEPH BRETTAUER, New York: Each case for ovarian transplantation ought to be individualized. To some women of a nervous temperament or who are neurasthenic, the removal of the ovaries is a more serious matter than it is to other women who are not so constituted.

DR. WILLIS E. FORD, Utica: I am pessimistic about leaving parts of ovaries. My experience has prejudiced me against it.

DR. PHILANDER A. HARRIS, Paterson, N. J.: It has been my rule in removing the uterus to leave an ovary or both ovaries, if possible. I leave all the tissues that are healthy. I was rather encouraged when I heard Dr. Goffe speak of having placed a piece of ovary in the uterus, but if the woman became pregnant, would it not cause a rupture of the uterus?

DR. HERMAN J. BOLDT: Are there cases in which, after an ovary has been left and the oviducts removed, the woman has subsequently become pregnant?

DR. BOVÉE: There are many such cases on record.

Nitrous Oxid in Labor

DR. N. SPROAT HEANEY, Chicago: (See abstract of paper by Dr. F. W. Lynch in THE JOURNAL, April 3, p. 1187.)

DISCUSSION

DR. JOHN O. POLAK, Brooklyn: Is it possible to continue nitrous oxid gas from the very beginning of labor as an analgesic method? About what would be the approximate cost of conducting a twelve to twenty-four-hour first stage with it, and how much personal attention would the obstetrician have to give in the management of the case?

DR. WILLIS E. FORD, Utica: Was there any cyanosis in the children, and is there more cyanosis from the use of gas than from ether?

DR. LOUIS FRANK, Louisville: I have used nitrous oxid gas as the anesthetic of choice in my surgical work for almost three years, including three cases of cesarean section. The administration of nitrous oxid gas and oxygen for analgesic purposes requires the services of an expert. It is the most dangerous of all anesthetics in unskilled hands, while in skilled hands it is the safest. The cost of the gas is lessened materially where large tanks are used and the gas is manufactured in the hospital.

DR. HIRAM N. VINEBERG, New York: In one or two instances I attempted to do a plastic operation under nitrous oxid and oxygen, but the blood was so black that the field of operation was obscured. We had to stop. I do not know whether it was improperly administered or not.

DR. N. S. HEANEY: During the latter part of the first stage and second stage we can give gas for 60 cents an hour. The amount of oxygen varies with each patient. It depends how quickly the woman passes into cyanosis and how much oxygen one should give. The less the amount of gas given the better. With the nose piece the cyanosis in the infant is less marked. It is hard to determine what the effect of any method is, provided the baby does not require artificial respiration. If it is blue it cries immediately. It is very gratifying in cesarean sections to have the child cry at once. You can then dismiss the child from your mind and attend to the mother, a thing which you are not able to do always under ether anesthesia in cesarean section.

The Management of the Placental Stage of Labor, with Special Reference to Retained and Adherent Placenta

DR. JOHN O. POLAK, Brooklyn: The placenta will separate spontaneously if the normal mechanism is allowed to obtain. Any manipulation of the uterus before the clinical evidences of separation are apparent will disturb this normal mechanism. Postpartum hemorrhage is best guarded against by the observance of the physiologic processes. Partial detachment, the result of manipulation, predisposes to bleeding. The normal mechanism of placental delivery is that described by Schultze. The Duncan mechanism occurs only in low implantations of the placenta or when manipulation has been untimely and vigorous. The placenta may be retained in the uterus for hours or days without danger to the patient, provided it is attached or completely detached, which insures that the bleeding will be negligible. Asepsis is dependent on the penetration of the uterus by the hand or instrument to infected passages, and not on the retention of the placenta. Manual extraction is admissible only in partial separation with hemorrhage. In retention of the placenta without hemorrhage, the cord should be cut off close to the cervix and the case watched until the time of separation is apparent, when the placenta may be expressed by Credé while the patient is under surgical anesthesia. Invasion of the uterus via the vagina is fraught with danger from infection, and on exploration, should the placenta not be found presenting at the internal os, infrapelvic delivery should be abandoned and delivery accomplished through sterile avenues by suprapubic extraperitoneal hysterotomy. When the adhesion is so great that its removal entails the digging out of the placenta piecemeal, excision of the placental site or hysterectomy should be the choice.

DISCUSSION

DR. WALTER P. MANTON, Detroit: Implantation of the placenta is, as a rule, a good deal lower than is usually supposed. A number of years ago I found that in several hundred consecutive cases the implantation was a good deal lower than what is stated in the textbooks. The implantation is apt to be lateral rather than frontal or parietal; therefore I do not believe that the Schultze method of delivery of the placenta is the normal one, but that the Duncan method is.

DR. GEORGE TUCKER HARRISON, Charlottesville, Va.: In cases in which the placenta is detached, the Duncan method is the one that should be employed. It is wrong to exercise compression as soon as the child is born. Let it alone.

DR. PHILANDER A. HARRIS, Paterson, N. J.: A placenta with the cord hanging from it was allowed to remain experimentally. It was all absorbed. We kept the patient in the hospital for weeks and weeks, and after absorption the uterus returned to its normal condition.

Primary Cancer of the Female Urethra: Plastic Work and Late Results

DR. H. S. CROSSEN, St. Louis: To determine the proportion of cases of cancer cured by operation, I have tabulated the operative cases found in a cursory examination of the litera-

ture as follows: cases subjected to radical operation, 25; cured (three years), 8; probable cures (two years), 3; recurrences, known, 8; results not known, 6. Of the treated cases, about half were cured. This is a very encouraging showing, considering the fact that lymphatic metastases take place directly in the deep glands within the pelvis. On account of the direction of the lymphatic drainage, the first metastases made recurrence certain, for the affected glands were beyond reach. Some of the operations were not very extensive, the operators removing only a half or two-thirds of the urethra. The large proportion of cures was probably due to the fact that in the urethra an area of irritation causes symptoms very early, and thus leads to investigation in diagnosis and radical treatment while the disease is still in a comparatively early stage.

DISCUSSION

DR. LEWIS S. MCMURTRY, Louisville: The chances for a radical operation being successful are endangered by the natural delay in making a diagnosis. I venture to say that nearly all cases reported have been primarily operated on as urethral caruncle, and the malignant character of the growth has been lost sight of until the patient has been under treatment for some time, and then failure of this treatment and extension of the growth have impressed the surgeon with its true character. If these cases were seen early and diagnosed promptly, the results from complete excision would be much better.

DR. FREDERICK J. TAUSSIG, St. Louis: Three months ago I removed a small nodule from the urethra of a woman, aged 53, and our pathologist examined it a long time before he made up his mind it was not malignant. The epithelial proliferations in the urethra closely simulate early cancer; probably a certain number of these cases that have been reported as cures were not really cancers.

DR. JOSEPH BRETTAUER, New York: I have had one case of primary carcinoma of the urethra. It is exceedingly difficult, if not impossible, to differentiate between early carcinoma of the urethra and urethral caruncle. It is more guesswork than anything else.

DR. HIRAM N. VINEBERG, New York: In one of my cases, the specimen was examined by two good pathologists, and both made a diagnosis of carcinoma. The woman is still free from recurrence, ten years after the operation.

DR. WILLIS E. FORD, Utica: In a case in which the growth was as large as a walnut and obstructing the passage of urine, I removed the urethra to such an extent that I thought I left but little of it. The patient got retention of urine. The growth returned within six or eight months. Since that time I have seen half a dozen cases, and with the exception of primary cancer of the clitoris, I think it is the most rapidly fatal of all cancers.

Prolapsus of Uterus

DR. HERMAN J. BOLDT, New York: Before deciding on a particular operation, it is well to consider whether future offspring is desired by the patient or not. A simple vaginal hysterectomy for prolapse of the uterus should have no place in our work, since by it a vaginal descensus cannot be cured. I know of no operation which answers an equally good purpose as a ventral suspension by the round ligament *a là* Gilliam, combined with a plastic operation on the pelvic floor, but not with too much narrowing of the vaginal canal. If properly done, a permanent cure will result in 90 per cent. of the cases unless a subsequent pregnancy should undo the result of the operation. Patients who have a marked descensus, or partial or complete prolapsus, in whom no further offspring is expected, may be treated by a vaginal operation with the expectation of getting a good result. I prefer the radical vaginal fixation. The technic must necessarily vary with the individual case. In patients who have complete procidentia of the uterus and vagina, and where no further use of the vaginal canal is to be made, we can do a total extirpation of the uterus and vagina, columnizing the vaginal tract by circular sutures, an operation that is comparatively simple, and an absolute guarantee as to permanent results.

(To be continued)

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Anatomy, Philadelphia

May, XVII, No. 4, pp. 403-523

1 *Origin and Early Development of Posterior Lymph Heart in Chick. R. West, Princeton, N. J.
2 *Development of Thymus in Pig. J. A. Badertscher. Ithaca, N. Y.
3 Premature Obliteration of Sutures in Human Skull. L. Bolk, Amsterdam.

1. **Origin of Posterior Lymph Heart.**—The evidence found by West from the study of injected embryos indicates that the lymphatic plexus which later enters into the formation of the posterior lymph heart, arises by the confluence of independent mesenchymal spaces which connect secondarily with the veins, that these spaces are bounded at first by mesenchymal cells which later become flattened to form an endothelium, and that both in the endothelial lymphatic walls and the adjacent mesenchyme an active hemopoesis, the products of which reach the general circulation via the lymphatic plexus, is taking place.

2. **Development of Thymus.**—The lymphocytes first present in the thymus Badertscher found are all large lymphocytes and have migrated into it from the mesenchyme. The numerous small round cells of the thymus are formed by the repeated division of the large lymphocytes which thus become small, and also by their own proliferation. Judging from the source and structure of the small round cells they are small lymphocytes and are identical with the small lymphocytes of the blood. The thymus, therefore, may well be considered as a source of some of the small lymphocytes found in the circulating blood. The reticulum of the thymus is of epithelial origin and is formed passively by its meshes becoming filled with lymphocytes which further separate the nodal nuclei and thus greatly attenuate the protoplasmic processes of the syncytium. The Hassall's corpuscles are of epithelial origin. The free red blood cells and eosinophil cells found in both interlobular septa and the thymic lobules are derived from lymphocytes in situ.

Whether or not any of the erythrocytes formed in the thymus enter the circulating blood, Badertscher says, is difficult to determine in fixed material. Some of the free erythrocytes undoubtedly undergo degeneration and the products of disintegration of those existing in the form of eosinophil granules are taken up by the lymphocytes which thus become transformed into eosinophil leukocytes. The histogenesis of the thymus is divided into epochs each of which is characterized by more or less distinct development features. They are: 1. The purely epithelial epoch which extends from its origin as an outpocketing from the third pharyngeal pouch and the formation of the cervical vesicle to the appearance of the first lymphocytes in the thymus. 2. The epoch of lymphocyte infiltration and lymphocyte proliferation and the formation of the reticulum. 3. The epoch of the formation of red blood cells and the development of granular cells.

Arkansas Medical Society Journal, Little Rock

May, XI, No. 12, pp. 279-301

4 Relationship Between Venereal Diseases and Pelvic Surgery. W. A. Snodgrass, Little Rock.
5 Typhus Fever, Its Etiology and Methods of Its Prevention. J. F. Anderson, U. S. P. H. Service.
6 New Science of Keeping the Well—Well. O. Dowling, Shreveport, La.

Archives of Internal Medicine, Chicago

May, XV, No. 5, pp. 645-792, Part I

7 *Investigation of Potency of Tincture of Aconite. G. C. Robinson, St. Louis.
8 *Nuclear Digestion and Uric Acid Excretion in Case of Total Occlusion of Pancreatic Duct. D. W. Atchley, Baltimore.
9 *Secondary Hypertrophic Osteo-Arthropathy and Its Relation to Simple Club-Fingers. E. A. Locke, Boston.

10 Chronic Ulcerative Colitis with Polyps. J. H. Hewitt and W. T. Howard, Cleveland.
11 Use of Abderhalden Reaction with Normal and Pathologic Human Serums. E. L. Ross and H. D. Singer, Kankakee.
12 *Factors of Coagulation in Primary Pernicious Anemia. C. K. Drinker and S. H. Hurwitz, Boston.
13 Origin of Proteins of Nephritic Urine. A. L. Cameron and H. G. Wells, Chicago.
14 *Case of Mercury Nephritis. N. B. Foster, New York.
15 *Oculocardiac Reflex. S. A. Levine, Boston.
16 *Coarse Auricular Fibrillation in Man. A. W. Hewlett and F. N. Wilson, Ann Arbor, Mich.

7. **Investigation of Potency of Tincture of Aconite.**—Robinson's experience with tincture of aconite as a means of lowering the pulse rate was obtained in an attempt to influence the tachycardia of exophthalmic goiter. A study of this condition was undertaken on the hypothesis that the tachycardia resulted from a lack of balance between the cardiac accelerators and the vagi and that if the so-called vagus tone could be increased, the cardiac rate would diminish. The tincture of aconite was administered in five cases of exophthalmic goiter, three of which were moderately severe, while two were mild. All of the patients had enlarged thyroids and tremor, while exophthalmos was very marked in two, moderate in two and absent in one case. The pulse rate after several days' rest in bed ranged from 110 to 120 beats per minute in one case, from 90 to 100 in two, and from 85 to 95 in two cases. In order to ascertain any effect the tincture of aconite might have on the heart in these cases, the pulse rate was studied under various conditions, both before and during the administration of the drug. These conditions consisted of rest in bed immediately after a constant amount of moderate exercise, and after administration of full doses of atropin. It was found that very large doses of the tincture of aconite produced no subjective symptoms and no slowing of the heart rate. Doses of 10 c.c. (approximately 150 drops) were given six times a day. An attempt to augment the action of aconite by physostigmin was not successful.

Although the chemical assay showed that the tincture used did not fulfil the Pharmacopeial requirements as regards its aconitin content, the discrepancy was not sufficient to account for the impotency of the drug. The physiologic assay showed that the minimal lethal dose for guinea-pigs of a substance giving the chemical tests for aconitin contained in the tincture was at least forty-five times as large as that of crystalline aconitin, and that the alcohol of the tincture apparently played no rôle in diminishing the toxicity of the solution by decomposing the aconitin. This substance in the tincture can hardly, therefore, be considered identical with crystalline aconitin. Robinson believes that these facts emphasize the necessity of physiologic standardization of the tincture of aconite, which is not now required by the Pharmacopeia. Evidence was obtained that the maximal doses of the tincture of aconite rendered the ventricles more liable to spontaneous contractions, apparently increasing their irritability.

8. **Nuclear Digestion and Uric Acid Excretion in Occlusion of Pancreatic Duct.**—The results of Atchley's experiment prove that in the human being the digestion of nuclear material, the purin metabolism and the uric acid formation do not depend on the presence of the pancreatic secretion in the intestinal canal. This finding, together with the negative result of the test in this case, and in many other reported cases, Atchley says, definitely points out the worthlessness of the Schmidt nuclear test for pancreatic function.

9. **Relation of Secondary Hypertrophic Osteo-Arthropathy to Simple Clubfingers.**—Hypertrophic osteo-arthropathy is considered by Locke to be always a secondary disease. Among the primary diseases, pulmonary tuberculosis is probably the most important though rarely inducing the extreme degree of bone and joint changes seen with bronchiectasis. There is a very definite correspondence between the characteristic clinical course of the disease and the process in the bones. During the periods of exacerbation in the primary disease, the pain, tenderness and swelling in the soft parts are not only increased, but the process in the bones is also more active. On the other hand, during the quiescent periods associated with cure or relief of the condition responsible for the bone and joint changes, the process in the bones is stationary and in rare instances actual resorption takes place. The new subperiosteal bone, which is at first sharply marked off from the old shaft, later becomes (usually after a period of some years) a more compact, dense layer, closely fused with the underlying old bone. In the late stages of the most progressive type of cases there is evidence of wide-spread halisteresis in the affected long bones. Occasionally the process in the bones and joints once established may progress even after actual cure of the primary disease.

The ungual phalanges as a rule show proliferative changes. They consist mainly in an irregular burr-like expansion of the distal half. More rarely small osteophytes are found at the proximal ends near the line of the joint cartilage. The epiphyses of the affected long bones are to some extent always involved, but the new osseous tissue is much more irregular in in outline and the ossification is less complete. The proliferation in the long bones in advanced cases is more general than has been recognized, often affecting nearly the entire skeleton. Changes in the joints are a constant and important feature of the disease. While the early changes are confined largely to the periarticular tissues, in the later stages, erosion of the cartilage, lipping about the joint, and even a moderate degree of ankylosis are common lesions. A considerable percentage of cases of so-called hippocratic fingers show by means of roentgenogram early proliferative changes in the periosteum of some of the long bones of the forearms and lower legs of exactly the same type as seen in hypertrophic osteo-arthropathy. Locke says that simple clubbing of the fingers and secondary hypertrophic osteo-arthropathy should be considered as identical, the former representing an early stage of the latter.

12. **Factors of Coagulation in Primary Pernicious Anemia.**—The studies made by Drinker and Hurwitz seem to emphasize the following points: 1. Prothrombin is diminished slightly in all cases of pernicious anemia. 2. This diminution is not great and is unimportant if active regeneration is in progress. 3. Antithrombin and fibrinogen are normal even in the presence of very low cell counts. 4. In one case in which there has been pronounced diminution in prothrombin, platelet counts have been strikingly low, and the picture throughout has been that of fairly complete aplasia.

14. **Mercury Nephritis.**—In the case of mercuric poisoning reported by Foster the patient lived forty-one days. The history presents some interesting departures from the common course of events in cases of this sort in which the duration of life is brief. Anuria was at no time a symptom, and when the amount of urine fell below normal this was adequately accounted for by a low ingestion of fluids. When the water intake was forced there was apparently a normal response in output. In contrast again with the usual picture are the convulsive seizures, muscular twitching and the toxic psychosis. Of those symptoms which are associated with uremia, there were observed in this case, besides the evidences of renal disease, epileptiform convulsions, muscular twitching and a psychosis of the usual toxic type. The necropsy disclosed, besides an eroded condition of the lower bowel and degenerative changes in the liver, a remarkable nephritis which was studied with care from many sections. The lesions found were those usually encountered in the kidney in cases of bichlorid (mercuric chlorid) poisoning.

15. **Oculocardiac Reflex.**—The material for Levine's study consisted of eight cases of tabes dorsalis, one case of taboparesis, five cases of syphilis which were nontabetic, nine cases of chronic endocarditis (having a normal rhythm), one case of chronic endocarditis with auricular fibrillation, five cases of lobar pneumonia, and one case of diabetes mellitus. The five nontabetic syphilitics included two cases of syphilis of the cerebrospinal meninges, one of syphilitic myelitis, one of syphilis of the heart, and one patient who has been observed during the secondary stage and who now suggests

signs of early tabes. Levine states that the oculocardiac reflex (inhibition of the heart produced by ocular pressure) is a normal but variable reflex. Some individuals normally have a more active oculocardiac reflex than others, just as some have more active tendon and superficial reflexes. In fact, when the reflex is considered absent there is often a slight inhibition of the heart. The reflex was found to be generally absent in tabes dorsalis. The only tabetic who had a moderate oculocardiac reflex, had no pupillary reaction to light whatever. In tabetics there was no difference between the effects of pressure on the two eyes. In nontabetics there was a distinct difference. The right reflex had a slightly greater effect on auricular contraction.

In Levine's opinion ocular pressure affords a simple and safe method of obtaining reflex vagus inhibition of the heart. Inhibition of the heart by the oculocardiac reflex is much more profound and more frequently obtained than by pressure over the vagus nerves. The oculocardiac reflex is generally absent in tabes dorsalis, present in pneumonia, syphilis (nontabetic) and chronic valvular disease. The reflex was absent in one case of diabetes mellitus and also in one case of auricular fibrillation before digitalis treatment. It was present after digitalis was given. Right ocular pressure has a slightly greater effect on the rate of the heart than left. It may stop the heart for a long period of time, relatively speaking, the *P* waves are sometimes diminished in size and may become iso-electric. Occasionally the auriculoventricular interval is lengthened. Left ocular pressure has a much greater effect on the conduction mechanism of the heart than right. It may lengthen auriculoventricular conduction, cause partial heart block and result, possibly, in automatic ventricular rhythm. On two occasions inverted *P* waves were seen. The height of the *R* waves is sometimes increased, at other times diminished. Ectopic ventricular beats were twice observed. The *P* waves are often diminished in size, but occasionally are increased. Escaped ventricular beats were seen both during right and left ocular pressure. Pain, flushing of the face, and apnea during ocular pressure, are much less pronounced in tabetics than in nontabetics. The effects on the rate and on the rhythm of the heart produced by ocular pressures are not constant, differing in different individuals and in the same individual from time to time. The duration and the degree of pressure play an important part in the degree of inhibition.

16. **Coarse Auricular Fibrillation in Man.**—A case of continuous irregularity is reported by Hewlett and Wilson in which the venous curves were characterized by numerous very rapid and irregular waves produced by auricular activity. These waves bore no definite relationship to the auricular fluctuations of the galvanometer string. The authors believe the condition to be one of unusually coarse auricular fibrillation.

Boston Medical and Surgical Journal

May 27, CLXXII, No. 21, pp. 769-806

17 How Practicing Physician May Aid Department of Health. A. J. McLaughlin, Boston.
18 Hospital Efficiency from Standpoint of Efficiency Expert. F. B. Gilbreth, Providence, R. I.
19 Hospital Efficiency from Standpoint of Hospital Surgeon. R. L. Dickinson, Brooklyn.
20 Hospital Efficiency from Standpoint of Hospital Trustees. W. Wesselhoeft, Cambridge.
21 Responsibility of General Practitioner for Care and Supervision of Discharged Sanatorium Patient. J. B. Hawes, 2d, Boston.
22 Tuberculosis of Throat. A. C. Getchell, Worcester.

Indiana State Medical Association Journal, Fort Wayne

May, VIII, No. 5, pp. 225-276

23 Technic of Wassermann Reaction. B. Erdman, Indianapolis.
24 *Border-Land Topics in Ophthalmology and Otolaryngology. J. C. Beck, Chicago.
25 *Some Ocular Tumors and Their Lessons. F. C. Heath, Indianapolis.
26 *Effects of Light on Eye. W. F. Hughes, Indianapolis.

24 and 25. Abstracted in THE JOURNAL, Oct. 24, 1914, p. 1500.

26. Abstracted in THE JOURNAL, Oct. 31, 1914, p. 1603.

Journal of Cutaneous Diseases, New York

May, XXXIII, No. 5, pp. 343-436

27 Epidemic Alopecia in Small Areas, in Schools, Regiments, Etc. J. T. Bowen, Boston.
28 Case of Mycosis Fungoides, Limited to One Foot. F. E. Senear, Ann Arbor, Mich.
29 *Local Treatment of Hyperkeratotic Eczema of Palms and Soles. D. W. Montgomery and G. D. Culver, San Francisco.
30 Case of Pellagra in New York. G. M. MacKee, New York.
31 Metabolic Influence of Chlorids on Certain Dermatoses. M. L. Ravitch and S. A. Steinberg, Louisville.

29. **Treatment of Hyperkeratotic Eczema of Palms and Soles.**—The hands are exposed to injurious influences, such as rough weather, water, cleansing agents, chemical solutions and various traumatisms, and the feet are commonly encased in ill-fitting and deforming shoes, which produce callosities and breaking down of the arch, thereby increasing sweating of the soles and resulting in maceration of the keratotic, thick epithelium. In no other type of chronic eczema is local treatment more efficacious and more satisfactory says Montgomery and Culver than in hyperkeratotic eczema of the palms and soles.

Locally a plaster mull may be employed, containing 5 per cent. salicylic acid in soap plaster:

℞ Acidi salicylici ..... 5 per cent.
Emplastri saponis (Beiersdorf)..... 95 per cent.

This is applied on the fingers and covered with zinc oxid adhesive plaster, so as to intensify its action. This is changed once in twenty-four hours. Under its use the hard, concrete-like hyperkeratosis of the fingers melt down, and the skin becomes smooth and supple. This plaster can not be applied to the feet as it would crumple up in walking, but an ointment may be prepared of about 12 per cent. salicylic acid in equal parts of lanolin and petrolatum, as follows:

℞ Acidi salicylici ..... 8.00 gm.
Lanolin,
Petrolatum .....āā 32.00 gm.
M.

This is applied in the morning, so that in walking it will be massaged into the skin. A few days later, when the patient is able to resume work, an ointment composed of one part of mercury in ninety-nine parts of simple ointment is used.

℞ Hydrarg. salicylatis ..... 1.00 gm.
Ung. simplicis ..... 99.00 gm.
M.

A salve composed of 6 per cent. each of red oxid of mercury and camphor and 12 per cent. of white lead, in an ointment base composed of equal parts of lanolin and petrolatum, may be used as follows:

℞ Hydrarg. oxidi rubri,
Camphorae .....āā 4.00 gm.
Plumbi carbonatis ..... 4.00 gm.
Lanolin,
Petrolatum .....āā 32.00 gm.
M. Sig.: Well rubbed in, twice a day.

In one case cited by Montgomery and Culver, after five weeks the daily applications were changed from the above to a lotion consisting of:

℞ Kali caustic ..... 1.50 gm.
Glycerin ..... 50.00 gm.
Spts. vini rect..... 50.00 gm.
Aquae rosae .....ad 150.00 gm.
M. Sig.: Local use, twice a day, before using a salve; and a salve consisting of:
℞ Hydrarg salicylatis ..... 0.30 gm.
Paraffin ..... 5.00 gm.
Petrolatum alb..... 25.00 gm.
M. Sig.: Rub in twice a day.

Another patient sought treatment on account of a hyperkeratotic eczema of the fingers and right palm. He also had hyperidrosis, accompanied with light red erythema of both palms. A lotion was prescribed, consisting of:

℞ Liq. plumbi subacetatis..... 16.00 gm.
Liq. carbonis detergentis..... 80.00 gm.
M. Sig.: Two teaspoonfuls in pint of hot water as a lotion and apply as compresses for ten minutes, twice a day.

There was also prescribed an ointment:

℞ Ichthyoli ..... 1.60 gm.
Hydrarg. oxidi rubri..... 4.00 gm.
Camphorae ..... 4.00 gm.
Plumbi carbonatis ..... 8.00 gm.
Lanolin,
Petrolatum .....āā 32.00 gm.
M. Sig.: Rub well into the lesions twice a day, after soaking the hands in the lotion.

Some time after this, the liquor carbonis detergens was painted on in full strength once a day, and the above dilute lotion of liquor carbonate detergens and lead water was used only once a day, in the evening. The ointment was changed to one of:

℞ Emplastri. plumbi,
Petrolatum .....āā 30.00 gm.
Melt together over a slow fire, stirring constantly and add:
Liq. cresol. com..... 1.20 gm.
M. Sig.: Use on fingers twice a day.

Six weeks after beginning treatment his lesions had all disappeared. In a number of instances in which other applications have failed, resorcin, in less than 4 per cent. strength, has been found excellent.

℞ Resorcini ..... 2.00 gm.
Glycerini ..... 2.00 gm.
Zinci oxidi..... 7.50 gm.
Cerae albae..... 1.50 gm.
Adipis benzoatae..... 50.00 gm.
Dissolve the resorcin in heated glycerin. Melt together the wax and the lard, and add, while constantly stirring, the dissolved resorcin and the well-triturated oxid of zinc. Sig.: Rub in well, twice a day.

The official unguentum acidi borici often acts well; the white precipitate in 2 to 4 per cent. strength in an ointment, may, in some instances, be better than the salicylate of mercury as given in one of the above prescriptions. Some of the best results in treating eczema of the soles, and especially of the palms, have been obtained by Montgomery and Culver by the use of Roentgen rays, after all other lines of treatment have failed, for months or even years.

Lancet-Clinic, Cincinnati

May 8, CXIII, No. 19, pp. 505-532

32 **Brief History of Antituberculosis Work in Cincinnati.** S. E. Allen, Cincinnati.
33 **Tuberculosis Problem of Cincinnati Today.** C. Dinwiddie, Cincinnati.
34 **Cincinnati Municipal Tuberculosis Program.** P. P. Jacobs, New York.
35 **Cincinnati Tuberculosis Program.** R. G. Paterson, Columbus.
36 **Coordination of Public and Private Effort in Antituberculosis Fight.** J. H. Landis, Cincinnati.
37 **Cincinnati Municipal Tuberculosis Committee Program from Standpoint of Practicing Physician.** H. L. Woodward, Cincinnati.
38 **Outline of Proposed Plan for Health Center.** C. Dinwiddie, Cincinnati.
39 **Cincinnati's Proposed Health Center—Statement.** G. M. Kober, Washington, D. C.
40 **Proposed Health Center.** D. E. Robinson, Cincinnati.
41 **Health Center as Opportunity for Fundamental Work.** W. R. Wherry, Cincinnati.
42 **Proposed Health Center from Standpoint of Practicing Physician.** E. W. Mitchell, Cincinnati.
43 **Health Center from Standpoint of Hospital.** A. C. Bachmeyer, Cincinnati.
44 **Proposed Cincinnati Health Center.** R. G. Paterson, Columbus.
45 **Year's Work in Cincinnati.** P. P. Jacobs, New York.
46 **Social Service and Administration in Antituberculosis Dispensary.** H. K. Dunham, Cincinnati.
47 **Medical Results in Antituberculosis Dispensary in 1914.** J. L. Tuechter, Cincinnati.
48 **Tuberculosis Work Among Jews of Cincinnati.** M. B. Hexter, Cincinnati.
49 **Cincinnati Tuberculosis Sanatorium.** A. C. Bachmeyer, Cincinnati.

May 15, No. 20, pp. 533-560

50 **Status of Cerebral Surgery.** J. Ransohoff, Cincinnati.
51 *Conservative vs. Radical Treatment of Eclampsia. J. H. Carstens, Detroit.
52 **Difficult Question of Physical Director.** I. O. Allen, Metamora, Ind.
53 **Fractures of Patella.** C. D. Schaefer, Allentown, Pa.
54 **Five Years' Work with Treatment of Pulmonary Tuberculosis by Artificial Pneumothorax.** M. E. Lapham, Highlands, N. C.

51. Abstracted in THE JOURNAL, Nov. 21, 1914, p. 1878.

Laryngoscope, St. Louis

April, XXV, No. 4, pp. 193-256

55 **Obligations of Physician.** R. E. Kane, St. Louis.
56 **Responsibilities of Community.** R. N. Baldwin, St. Louis.
57 **Medical Cooperation.** M. A. Goldstein, St. Louis.
58 **Practical Demonstration with Pupils of Central Institute for Deaf.** E. M. Hilliard, St. Louis.
59 **Need of Properly Qualified Teachers for This Work.** J. S. Morrison, Fulton.
60 **External Operation of Frontal Sinus.** R. H. Skillern, Philadelphia.
61 **Blindness Incidental to External Ethmoidal Operation.** H. Smith, New York.
62 **Congential Bony Occlusion of Right Nasal Coana.** W. J. Thomasson, Newport, Ky.
63 **Case of Nasopharyngeal Sarcoma and Two Cases of Nasopharyngeal Fibromata.** H. Smith, New York.
64 **Parenchymatous Glossitis following Submucous Resection of Septum.** F. C. Raynor, Brooklyn.
65 **Report on Connellan-King Diplococcus Infections of Throat.** J. J. King, New York
66 **Responsibility of Physician in Oral Infections.** W. H. Haskin, New York.
67 **Case of Primary Mastoiditis.** H. Bonner and H. V. Dutrow, Dayton, O.

Medical Record, New York

May 29, LXXXVII, No. 22, pp. 883-924

68 **Prognostic Significance of Changes in Retinal Vessels.** A. Knapp, New York.
69 **Studies of Atypical Children.** W. B. Noyes, New York.
70 **Cure of Goiter by Injection of Boiling Water into the Substance of Enlarged Thyroid.** J. A. Wyeth, New York.
71 **Importance of Early Recognition of Mental Limitations of Praecox Type.** J. R. Ernst, Washington, D. C.
72 **Novocain-Suprarenin Infiltration-Conduction Analgesia in Repair of Inguinal Hernia.** I. Seff, New York.
73 **Acid Crises.** W. F. Dutton, Tulsa, Okla.
74 **Psychogenic Convulsions.** T. H. Ames and R. MacRobert, New York.
75 **Humanized Milk in Infant Feeding.** J. Epstein, New York.

New York Medical Journal

May 29, CI, No. 22, pp. 1089-1140

76 **Blindness of Newborn.** (To be continued.) H. P. De Forest, New York.
77 **New Species in Human Family (Digitigrade).** D. D. Ashley, New York.
78 **Gastro-Intestinal Roentgenography in Trendelenburg Position.** S. Tousey, New York.
79 **Red Cross Problems in Time of War.** C. S. Ford, Fort Leavenworth, Kan.
80 *Ectopic Gestation. H. C. Taylor, New York.
81 **Surgical Treatment of Hyperthyroidism.** J. B. Haeberlin, Chicago.
82 **Visual Perception, Retention and Reproduction.** A. Brav, Philadelphia.
83 **Syphilis of Nervous System.** F. J. Conzelmann, Winnebago, Wis.
84 **Management of Septic Conditions in Abdominal Cavity.** A. M. Willis, Richmond.

80. **Ectopic Gestation.**—Of the forty-four cases analyzed by Taylor, 76 per cent. gave a history of inflammation of the appendages, or it was discovered at the time of the operation. In 81 per cent. of the cases there was a history of irregularity in the menstrual bleeding. In 8.7 per cent. there was a history of amenorrhea lasting to the time of operation. In 69.6 per cent. of the cases of ruptured ectopic sac, the classical symptoms of acute localized sharp pain, with nausea, vomiting, and fainting were present. Of the unruptured cases 92.3 per cent. of the patients suffered from pain on the side of the diseased tube. The breasts were enlarged and tender in 44 per cent. of the cases and in 55 per cent. they showed no change. In the unruptured cases in the series, the average number of white blood cells was 8,670 with 73 per cent. polynuclear cells and 25 per cent. lymphocytes. Excluding the infected cases, the average white blood count was 14,430 and 83.7 per cent. polynuclear cells.

There were four deaths or a mortality rate of 8.7 per cent. Two of the deaths were in cases that had advanced beyond the fifth month. One patient died from shock and hemorrhage and the other from septicemia. Excluding the cases that ended fatally and those in which the operation precluded pregnancy, there were fourteen patients whose history in regard to subsequent pregnancies was obtained. Of these fourteen patients, three had subsequent normal pregnancies. One patient had three children, another two children, and the third had a miscarriage. In addition to these cases of normal pregnancy, there were four cases of 8.7 per cent. of subsequent extra-uterine gestation.

Oklahoma State Medical Association Journal, Muskogee

May, VII, No. 12, pp. 383-425

85 Hygienic Management of Children. S. P. Rawls, Altus.
86 Infant Feeding. C. Puckett, Pryor.
87 Summer Diarrhea of Children. J. W. Browning, Geary.
88 Our Society. E. Lamb, Clinton.
89 Pellagra. J. C. Watkins, Checotah.
90 Medical Conservation; Some Problems and Solutions. W. G. Little, Okmulgee.
91 Nephritis. B. H. Day, Oklahoma City.

Southwest Journal of Medicine and Surgery, El Reno, Okla.

May, XXIII, No. 5, pp. 137-164

92 Treatment of Ischiorectal Abscess and Fistula in Ano. W. H. Stauffer, St. Louis.
93 Something New in Tonsil Surgery. W. F. Cole, Waco, Tex.

Surgery, Gynecology and Obstetrics, Chicago

May, XX, No. 5, pp. 501-630

94 Empyema of Thorax; Study of Two Hundred and Ninety-Nine Cases. A. O. Wilensky, New York.
95 *Ureteral Calculi; Special Means of Diagnosis and Newer Methods of Intravesical Treatment. J. T. Geraghty and F. Hinman, Baltimore.
96 *Spina Bifida; Tibial Transplant, Father to Child. H. H. Trout, Roanoke, Va.
97 Anuria Due to Unilateral Calculous Obstruction. L. Frank, Louisville, Ky.
98 Serologic Findings in One Hundred Cases, Bacteriologic Findings in Fifty Cases and Résumé of Six Hundred and Seventy-Nine Cases of Abortion at Michael Reese Hospital. J. E. Lackner, Chicago.
99 *Tumors of Mediastinum. W. D. Haines, Cincinnati.
100 *Periosteal Regeneration of Bone. F. D. Smith, Chicago.
101 *Case of Perforation of Juncture of Cystic and Common Ducts; Primary Suture—Recovery. V. A. Lapenta, Indianapolis.
102 Ether-Oil Colonic Anesthesia; Report of Thirty-Six Head and Neck Operations. J. E. Lumbard, New York.
103 Preliminary Report on Use of Percy Cautery in Carcinoma Uteri, With Especial Reference to Its Use as Forerunner to Wertheim Operation. S. M. D. Clark, New Orleans.
104 Occurrence of Nine-Millimeter Human Embryo in Margin of Full-Term Placenta. R. L. Moodie, Chicago.
105 Benign Bone-Cysts; Report of Four Cases. M. Skinner, Liverpool, England.
106 *Access to Deeper Orbit. W. Van Hook, Chicago.
107 Congenital Defects of Anus and Rectum. E. C. Brenner, New York.
108 Case of Mediastinal Thyroid Removed by Transsternal Mediastinotomy. H. Lilienthal, New York.
109 New Technic for Operations on Steno's Duct. H. Crouse, El Paso, Tex.
110 Operative Treatment of Retroversion of Uterus. J. G. Clark, Philadelphia.
111 History of Retrodisplacements of Uterus. H. A. Kelly, Baltimore.
112 Modification of Alexander Operation Through Pfannenstiel Incision. B. C. Hirst, Philadelphia.
113 Operative Treatment of Retroversion of Uterus. E. B. Cragin, New York.
114 Surgical Treatment of Retroversion of Uterus, with Special References to Lower Pole. J. W. Bovée, Washington, D. C.
115 Gilliam Operation for Deviations of Uterus. D. T. Gilliam, Columbus, O.
116 Principles and Practice in Surgical Treatment of Retrodisplacements of Uterus. J. C. Webster, Chicago.
117 Operative Treatment of Retrodisplacement of Uterus. E. E. Montgomery, Philadelphia.
118 Surgical Treatment of Retroversion of Uterus. J. M. Baldy, Philadelphia.
119 *Button Suture in Anterior Colporrhaphy. S. F. Wilcox, New York.
120 *Oil-Impregnated Drainage Tubing. S. W. McArthur, Chicago.

95. **Ureteral Calculi.**—The symptoms of ureteral calculus are not diagnostic and are insufficient to definitely determine either its presence or position except in rare instances. While roentgenography is the simplest and probably the most valuable single diagnostic method for the detection of ureteral calculi, even in the most expert hands, a surprisingly large percentage (22.4 per cent.) may be undetected by it. This large percentage of failures demands the employment of supplementary methods, before excluding stone with any degree of positiveness. By means of collargol ureterograms a calculus occasionally will be shown which the simple Roentgen ray failed to reveal.

In Geraghty and Hinman's experience the employment of the wax-tipped catheter is by far the most accurate method for the detection of ureteral calculi, and this method should be in more general use. In six out of thirty-six cases of ureteral calculi (20 per cent.) seen by the authors in the last two years, it has located a stone in which repeated roentgenograms were uniformly negative. Owing to the great frequency of extra-ureteral shadows in the region of the pelvic portion of the ureter, diagnosis of ureteral stone in this position cannot be accepted without confirmatory information. A considerable percentage of stones which enter the ureter pass spontaneously, and the discovery of a small calculus is not always an indication for immediate operative interference. Unless the stone is blocking completely or producing repeated and violent colic, simple manipulative methods should first be employed. For calculi beyond the juxtavesical portion, displacement with the ureteral catheter, injection of oil or the securing of relaxation of the ureteral wall by using the thermocatheter may, in certain cases, result in the expulsion of the stone. When the stone is in the vesical portion of the ureter, cystoscopic procedures should usually be successful. A study of the authors' cases, as well as different series reported in the literature, shows that a considerable proportion (14.3 per cent. G. and H.; 17 per cent. of 204 cases, Jeanbrau) of ureteral calculi are arrested in the intramural portion of the ureter, a portion which can be readily reached by cystoscopic methods.

96. **Spina Bifida; Tibial Transplant.**—An incision about 10 cm. long was made over the crest of the father's tibia and a rectangular piece of bone about 4 x 6 cm. and 2 mm. thick was removed by means of a circular saw, leaving the periosteum attached and extending over each side for about 1 cm. In this manner the medullary cavity of the tibia was not entered. The graft was immediately placed in a pan of warm normal saline solution and kept there for further use. The baby was etherized and a transverse elliptical incision made over the tumor so as to have the incision removed as far as possible from the anus. The sac was readily exposed and the dissection was quickly carried down to the cleft in the spine. This cleft was about 2 x 5 cm. and situated in the lumbosacral region. An opening was made in the fundus of the tumor, allowing about 300 c.c. of clear serum to escape. This exposure showed the various nerve-roots radiating over most of the sac, especially in the dorsomedian aspect. It was Trout's intention to trim around these nerve roots as is usually done, but each time he pinched or cut one of them with the scissors the child would stop breathing and become cyanotic. He then decided to close up the sac some distance from the ends of the nerve roots, which he did with a continuous plain catgut suture, and then shoved this collapsed tumor into the cleft somewhat after the manner of Schmidt, held it in this position, placed the bone graft removed from the father's tibia over it and anchored it by means of chromic catgut No. 0 sutures. These sutures were placed through the periosteum of the graft, the cartilage of the transverse and spinous processes and any other firm structure the curved needle would grasp. In order to prevent too much pressure on this collapsed sac the graft was bent like a bow and held in this position on all sides by sutures. The skin was sewed up with fine black silk, and silver foil, cotton and collodion dressing was applied. The result was entirely satisfactory.

99. Abstracted in The Journal, Jan. 17, 1915, p. 232.

100. **Periosteal Regeneration of Bone.**—Smith claims that periosteum stripped quickly and with a sharp periosteotome will produce bone in a greater percentage of cases if young animals are used than if fully developed adult animals are employed. Likewise a greater percentage of positive results will be obtained with periosteum which is stripped slowly and with an elevating action of the periosteotome than when the periosteum is quickly torn loose from the compact bone. A very large percentage of positive results can be obtained by using very young animals and small strips of periosteum. Fibrin is a very active stimulant to osteoblastic activity. These conclusions are drawn from considerable experimentation carried on at several different institutions, some under very adverse conditions and others under favorable circumstances. The experiments are not enumerated.

101. **Perforation at Juncture of Cystic and Common Ducts.**—The point emphasized by Lapenta is that a correct diag-

nosis was made from the peculiar coma the patient exhibited. The patient was found unconscious, temperature 94⅘, pulse 120, and respiration 40. Breathing was entirely thoracic. Very slight palpation in the region of the epigastrium quickly aroused the patient, causing unbearable pain. It was very clear that a perforation of the duodenum, stomach, or gall-ducts had occurred. No history of previous illness or attacks could be obtained from the patient. Questions were answered incoherently and unwillingly. Considering that there was no blood in vomiting but only a greenish acid liquid, and on the statement of a relative that the patient had never had any gastric disorders, and taking into consideration the comatose state of the patient, which Lapenta always regards in upper abdominal calamities as characteristic of common-duct trauma, he was led to diagnose the case as one of common-duct perforation. A perforation about 7 or 8 mm. in length was found below the juncture of the common duct, and a calculus was protruding from the rent. A cholecystostomy was performed to secure drainage and as an expectant measure for the probable development of a common-duct stricture, in order to afford immediate protection to the dying patient against a biliary obstruction. The recovery was uneventful, the patient being dismissed from the hospital completely cured after three weeks.

106. **Access to Deeper Orbit.**—The essential point in the method practiced by Van Hook is the free removal of the superciliary projection until the orbit is widely open. The author believes that by its use the extraction of the supra-orbital nerve will be much facilitated and the results improved.

119. **Button Suture in Anterior Colporrhaphy.**—The operation devised by Wilcox is performed as follows: With the patient on the back and the perineum retracted, the cervix is caught with volsellum forceps and the anterior vaginal wall put on the stretch. A small opening is made through the vaginal mucous membrane just anterior to the cervix. Through this the blades of a pair of blunt-pointed scissors are introduced and worked up between the vaginal and cystic layers by alternately spreading and closing the blades until the two membranes are separated as far as the base of the urethra. Then the vaginal mucous membrane is split vertically and the lateral dissection may be carried as far as desired with the fingers or instruments. While the flaps are drawn taut, a curved needle armed with a double suture of ten-day chromicized gut on which an ordinary pearl shirt button is strung, is passed through from the base of one flap to the other. Three or more similar sutures are placed in the same manner. Then the second set of buttons are threaded on to the sutures and the flaps approximated. Only sufficient tension is made to hold the flaps in approximation without undue pressure. After the sutures are tied over the buttons, and cut off, the flaps are trimmed down until there is about a quarter of an inch of tissue projecting beyond the edges of the buttons. The edges of the flaps are then whipped together with a continuous suture of plain catgut. None of the sutures require removal and the buttons will come away in about two weeks.

120. **Oil-Impregnated Drainage Tubing.**—Attention is called by McArthur to the use of a properly prepared "oil-impregnated" rubber tube in postoperative drainage in localities in which a serofibrinous or hemorrhagic exudate is ordinarily expected during the first twenty-four to seventy-two hours. Suitable pieces of pure para gum tubing are boiled for a few minutes in weak soda solution, to remove traces of the surface sulphur, washed in clean water, dried, and then dry-sterilized in a steam autoclave. The tubing should be one-half the caliber and two-thirds the length of the desired end-results, because of the changed size subsequently induced by the oil. These tubes are then allowed to stand completely immersed in suitable jars of sterile "petrolatum liquidum," U. S. P., for not longer than one week at room temperature. At the end of this time they are removed from the oil with proper aseptic precautions, the excess of oil shaken off, and are preserved ready for use in normal salt solution containing 1:1,000 bichlorid.

Texas State Journal of Medicine, Fort Worth

May, XI, No. 1, pp. 1-70

121 Surgical Treatment of Puerperal Infection. C. J. Miller, New Orleans.
122 Puerperal Streptococcemia; Report of Two Cases. G. B. Foscue, Waco.
123 Preventive Gynecology—Burden of Obstetrics. W. C. Dickey, Memphis.
124 Prolapse of Uterus. J. S. McCelvey, Temple.
125 Placenta Praevia and Its Treatment. M. Swearingen, Honey Island.
126 Postoperative Hemorrhage of Fallopian Tubes. B. F. Smith, San Antonio.
127 Medical Aspect of Intestinal Toxemia. H. G. Walcott, Dallas.
128 Diagnosis of Intestinal Toxemia by Use of Roentgen Ray. J. M. Martin, Dallas.
129 Resume of Chemical Analysis of Stomach Contents in One Hundred Consecutive Cases of Indigestion. A. Woldert, Tyler.
130 Disorders of Stomach, with Reference to Disease in Other Viscera. R. A. Duncan, Graham.
131 Amebic Infection. F. D. Garrett, El Paso.
132 *Clinical Aspects of Bacillary Dysentery in Texas. J. G. Bryson, Bastrop.
133 Eye Injuries. J. M. Woodson, Temple.
134 Case of Blepharoplasty Undertaken to Cover an Eyeball Exposed for Fourteen Years. J. W. Thomason, Huntsville.
135 Tonsil as Chronic Infective Focus. H. B. Decherd, Dallas.
136 Some Clinical and Pathologic Findings of Tonsil. G. S. McReynolds and J. E. Robinson, Temple.
137 Flat Foot. L. A. Suggs, Fort Worth.
138 Psychotherapy. J. Greenwood, Houston.
139 *Report of Cases. J. B. Shelmire, Dallas.
140 Instructions to Local Examiners. W. A. King, San Antonio.
141 How To Fit Up Practical Clinical Laboratory. B. F. Smith, Jr., Galveston.
142 Inoculation of Lupus Vulgaris with Streptococcus; Report of Case. C. P. Brewer, Fort Worth.

132. **Bacillary Dysentery.**—Bryson calls attention to the fact that bacillary dysentery exists to a considerable extent in Texas, a locality not frequently mentioned in literature. Because of the fact that simple or catharrhal dysentery is so common and resembles bacillary dysentery so much during the first few days, Bryson always gives the following old prescription until at least twelve doses have been taken:

Tincture Opii (Deod.),
Ac. Sulph. Arom. ..... āā f℥i
Magnus Sulph. ..... ℥i
Syr. Zingib. ..... q. s. ad ℥vi
M. Sig.: Take tablespoonful in water every three hours. For adults, children and infants, in proportion to age.

When convinced that he is dealing with a case of bacillary dysentery, he stops the opiate and pushes the salines vigorously for the next few days, until the amount of mucus in the stool has been greatly reduced. Bismuth may be given in large doses after the active infection is over, as it may coat and heal the irritated bowel. After the bowel has been thoroughly cleansed with salines, and the diet regulated, elevate the patient's hips on the side of the bed, with an oil sheet or pad under him to drain the return flow into a vessel, and pass a sterilized soft rubber colon tube of medium size into the bowel very slowly, avoiding any force. If the tube meets with resistance, stop; and if the relaxation does not permit the tube to pass on, connect it with the syringe and let a small amount of the warm saline solution flow in, it will thus pass without any pain to the patient or injury to the inflamed bowel. When passed well into the bowel, let the solution flow with gentle pressure, and when the patient complains of fulness and discomfort, he should be instructed to strain and expel the excess of the fluid, all the while it is flowing in from the syringe. Repeat this as often as indicated during the active inflammation. It is beneficial to use them every three or four days, gradually decreasing as the active inflammation subsides. Warm saturated solution of boric acid is just as safe, and in addition is a mild antiseptic and astringent. A solution of bichlorid of mercury, 1:4,000 or 1:5,000 may be used. The most effective application Bryson has used is a solution of silver nitrate, beginning with about 20 grains to the quart of sterile warm water, and increasing the strength to 40 grains to the quart.

139. **Report of Cases.**—The cases reported by Shelmire are the following: Orthoform dermatitis, multiple nonpigmented sarcoma, multiple neuritis from arsenic paste, xeroderma pigmentosum, leprosy and dermatitis venenata.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

Archives of Roentgen Ray, London

May, XIX, No. 12, pp. 411-450

1 Passage of Fluid Through Body of Human Stomach. G. Jefferson.
2 Roentgenography in Diagnosis of Diseases of Accessory Nasal Sinuses. H. M. Berry.
3 Treatment of Onychia by Ionic Medication. D. de Vos Hugo.

British Medical Journal, London

May 15, I, No. 2837, pp. 833-876

4 Cases of Nervous and Mental Shock. W. A. Turner.
5 Epidemic Cerebrospinal Fever; Its Recognition and Treatment. A. Lundie, D. J. Thomas, S. Fleming and P. W. MacLagan.
6 Eight Cases of Epidemic Cerebrospinal Meningitis in Infants. H. T. Ashby.
7 Aluminium Skeleton Splints in Treatment of Compound Fractures. C. M. Page.
8 Treatment of Malignant Disease by Roentgen Rays. J. A. Codd.
9 *Eleven Cases of Malignant Edema. F. McKelvey.
10 Case of Urinary Amebiasis. H. J. Walton.
11 Chronic Intestinal Stasis Associated with Lane's Ileal Kink and Hypothyroidism. C. Mayer.
12 Case of Lacrymal Concretions. G. Maxted.
13 Excessive Reaction Following Use of Tincture of Iodin. W. J. Rutherfurd.

9. **Malignant Edema.**—Bell urges making immediate and deep incisions down to the bone, under chloroform, by means of a 6-inch blade amputation knife. These incisions are from 4 to 6 inches in length. They are afterward kept wide open with fenestrated rubber tubes, 1 inch in diameter, passed on transversely through the muscle to a counter incision. Not less than three, and in one case six large openings were made. The wounds were irrigated with solutions of hydrogen peroxid of the ordinary strength, followed by a mixture of the same solution, with an equal quantity of phenol 1 in 100. The wounds were also lightly packed with gauze. Dressings and irrigation were repeated every three hours. A high cradle was placed over the wounded part so as to admit plenty of air. After a few hours (as soon as checking of bleeding would permit) the gauze drainage was removed and only a thin layer of gauze left to cover the wound. It is quite possible that had these wounds been exposed for hours to direct sunlight the author would have had a more rapid result. The wounds have a great tendency to close in a few hours, and this, unless prevented by the surgeon, will bring about the anaerobic conditions which he is trying to avoid. A pair of forceps and the moving about of the rubber tubes will prevent this accident. Night and day special nurses were employed, and since the adoption of this system of treatment (in the last seven cases) there have been no deaths. Recovery took five to seven days.

Dublin Journal of Medical Science

May, III, No. 521, pp. 321-400

14 Outbreak of Cerebrospinal Meningitis in Dublin Military District. G. E. Nesbitt.
15 An Account of Irish Medical Periodicals. Dublin Hospital Reports and Communications in Medicine and Surgery. T. P. C. Kirkpatrick.
16 Exploitation of Medical Profession in Respect to Medical Certificates. J. Moore.

Edinburgh Medical Journal

May, XIV, No. 5, pp. 321-408

17 *Pancreatic Infantilism. B. Bramwell.
18 New Psychiatry. (To be continued.) W. H. B. Stoddart.
19 War and Psychiatry. I. Emslie.
20 Pulmonary and Intestinal Tuberculosis with Tuberculous Empyema, Tuberculous Septicemia and Terminal Intestinal Hemorrhage. J. Ritchie.

17. **Pancreatic Infantilism.**—In February, 1902, and March, 1904, Bramwell published the data of a case of infantilism associated with chronic diarrhea, in which the condition was due to defective or arrested pancreatic secretion, and in which the diarrhea was cured and the infantilism removed by the administration of pancreatic extract and by that means alone. Bramwell claimed then that the condition, pancreatic infantilism as he termed it, is a distinct clinical entity, a disease which had not hitherto been recognized and described. The characters of pancreatic infantilism are: arrested bodily and arrested sexual development; intelligence good, no mental defect; no deformity or structural defect of the bones; no visceral disease or derangement except chronic diarrhea, flatulent distention of the abdomen, and defective or arrested pancreatic secretion. The defective or arrested pancreatic secretion Bramwell believes to be due probably to chronic pancreatitis. In some cases the condition (chronic diarrhea and infantilism) is completely cured by the administration of pancreatic extract and by that treatment alone.

The author details the after-history of his case and refers to other cases which have been recorded since he directed attention to the condition. For the past ten years his patient has enjoyed excellent health (with the exception of an attack of dyspepsia, due to errors in diet, during March and April, 1914), and has been regularly at work as a tailor. During the past nine years his bowels have been very regular; he has, as a rule, one motion a day, seldom two; the motions are always formed and natural. Before the pancreatic treatment was commenced there were, on an average, 5 or 6 loose motions daily. Before the treatment the patient had not grown at all for eight years. After the treatment he gradually commenced to grow. He now measures 5 feet 3 inches and weighs 7 stone 13 pounds (101 pounds), an increase of 10⅞ inches in height and 3 stone 5½ pounds (47½ pounds) in weight. The sexual development, which when the patient came under observation was quite infantile, gradually become complete. The patient lost his child-like appearance; his voice, which was high pitched and childish, became low toned and rough.

Glasgow Medical Journal

May, LXXXIII, No. 5, pp. 321-399

21 Preventive and Curative Treatment of Pneumococcal Ulcer of Cornea. A. M. Ramsay.
22 Prognosis and Treatment of Congenital Syphilis, with Plea for Notification. L. Findlay and M. E. Robertson.
23 Chorea. (To be continued.) I. MacKenzie.

Indian Medical Gazette, Calcutta

April, L, No. 4, pp. 121-160

24 Pyorrhea Alveolaris as Streptococcal and Amebic Disease and Its Treatment by Vaccine and Emetin. L. Rogers.
25 Inoculation Against Plague and Pneumonia and Experimental Study of Therapeutic Methods. W. M. Haffkine.
26 Studies in Malaria. H. Stott.
27 Macrostoma Found in Human Intestinal Contents. G. C. Chatterjee.
28 Co-Relation of Ductless Glands and Onset of Labor. F. Barnardo.
29 Case of Excision of Upper Jaw for Sarcoma Performed at Sree Sree Sree Bir Hospital, Nepal (Khatmundu). S. C. Das Gupta.

Journal of Tropical Medicine and Hygiene, London

May 1, XVIII, No. 9, pp. 97-108

30 Meteorology of Malaria. M. D. O'Connell.
31 Atrophodermia Biotriptica in Natives in Anglo-Egyptian Sudan. A. J. Chalmers and C. M. Drew.

Lancet, London

May 15, I, No. 4785, pp. 1009-1064

32 Some Infections of Tonsils. (To be continued.) F. C. Pybus.
33 Case of Perithelioma of Superior Maxilla and Ethmoid. G. H. L. Whale.
34 *Spinal Anesthesia (Novocain) in Forty-Three Suprapubic Prostatectomies. H. M. Page.
35 *Tuberculin Administration and Graduated Labor. E. Taunton.
36 Report of Cases Illustrating Removal of Foreign Bodies on Roentgen-Ray Table. J. R. Caldwell.
37 *Chemistry of Rice-Polishings. H. Fraser and A. T. Stanton.
38 Bolt for Treatment of Fractures. C. Wallace.
39 Shell Wound of Left Shoulder; Extraction of Fragment from Neck. J. B. Haycraft.
40 Case of Intestinal Obstruction Due to Gallstone. A. R. Neligan.

34. **Spinal Anesthesia in Suprapubic Prostatectomy.**—In the cases reported by Page no failure to obtain muscular relaxation or analgesia occurred. Anesthesia, though slow to appear in three cases, was perfect eventually in 41 cases out of the 43; in the 2 others there were muscular relaxation and analgesia of the bladder. Thirty-four of the cases were operated on without any general anesthesia. Nitrous

oxid and oxygen were given to 4 patients for prevention of mental shock, the spinal anesthesia being perfectly good. In 3 patients a little general anesthesia was given during the skin incision, after which it was withdrawn and no more given. These 3 patients were completely conscious when the skin was being stitched up at the end of the operation. The skin was then completely insensitive; therefore they were cases in which the anesthesia came on more slowly than usual. In two other patients a little general anesthetic was given during the skin incision and stitching up only, none being given during the opening of the bladder or enucleation, muscular relaxation and bladder analgesia being present. Two patients died. One at the time of operation was suffering from uremia. He recovered normally from his spinal paralysis and was no worse at the end of the operation than before and remained no worse for two days, when vomiting and diarrhea came on. The second recovered normally from the spinal injection and operation. Did perfectly well for ten days, when an attack of acute lobar pneumonia came on and he died in a few days.

35. **Tuberculin Administration and Graduated Labor.**—Patients admitted to the Royal National Hospital, Ventnor, undergo the ordinary open-air sanatorium treatment with rest or systematically graded exercise according to the state of the case. A part of the accommodation of the hospital (about a fourth) is, however, set apart for prolonged treatment of selected cases by a course of graduated labor. After selection these patients are on probation for a period of not less than four weeks, and if that term is passed satisfactorily they are taken in as "workers" to the special working blocks, in which they remain until they leave the hospital. Tuberculin has been carefully administered in some of the most promising of these selected "workers" by the intensive method, either "B. E." or "T. R." Slight reactions were occasionally observed. In the rare cases of prolonged reaction the use of tuberculin was discontinued.

As the result of inquiries sent by Taunton to all of the 300 patients whose cases are under consideration, 189 returns were sent in—61.6 per cent. of the cases treated with tuberculin ("T." cases), and 63.2 per cent. of those treated without it ("N. T." cases). The deaths recorded were not markedly different in the "T." and in the "N. T." groups, namely, 8.3 per cent. for both in women and 12.8 per cent. "N. T." men and 16 per cent. "T." men. Among the "N. T." cases 79.1 per cent. of women and 71.1 per cent. of the men were reported as able to do their work, while of the "T." cases only 50 per cent. of the women and 56 per cent. of the men could do so. To put it another way, adding together the men and women, while of the "N. T." cases 26.9 per cent. were unfit for work or were dead, of the "T." cases 46.9 per cent. were so conditioned.

It was apparent that the administration of tuberculin to selected phthisic workers does not shorten, but, on the contrary, it lengthens, the duration of treatment. The use of tuberculin does not increase the ability to do work. It appears not only to delay the improvement in working ability, but it also diminishes the ultimate ability achieved by a more prolonged course of treatment. So far as gain in weight and the rate of gain enable one to judge, the administration of tuberculin is detrimental to the nutrition of patients to whom it is given under these conditions. The after results in fitting patients to do their work after leaving the hospital in these cases are less favorable in cases in which the tuberculin has been used than in the cases in which it has not.

37. **Chemistry of Rice Polishings.**—Polishings were extracted by Fraser and Stanton twice with six times their volume of 0.3 per cent. hydrochloric acid. The polishings after extraction were tested and found valueless. Alcohol was added to the extract so as to bring the mixture up to the strength of proof spirit. The precipitate, which consisted of phytin, was rejected. The filtrate was nearly neutralized, concentrated at a low temperature, and its volume so adjusted that 30 c.c. contained the material soluble in proof spirit from 5 gm. of polishings. Eighteen fowls were fed on polished rice and received once daily 30 c.c. of this solution. Their health was unimpaired. Another lot of polishings was extracted in the same way and alcohol added to the extract as before. To the proof-spirit filtrate sodium hydrate was added so as to make a solution containing 0.3 per cent. of that substance. The precipitate was collected, and the amount of it obtained from 5 gm. of polishings was given once daily to each of six fowls fed on polished rice. The filtrate was neutralized and evaporated at a low temperature until free from alcohol. The volume of the solution was then adjusted, so that 30 c.c. represented the nonalkali precipitable material from 5 gm. of polishings. Each of six fowls on polished rice received 30 c.c. of this solution once daily.

The fowls in neither of these two groups did well and most of them lost weight rapidly. On further examination it was found that 0.3 per cent. of sodium hydrate did not effect complete precipitation. From this it was inferred that the active substance was either separated into two parts or that it has been decomposed by the alkali. It was found that by making the proof spirit alkaline to the extent of 0.5 per cent. sodium hydrate, precipitation was complete. An experiment was then carried out in which fowls on polished rice received daily the alkaline precipitate obtained in this way from 5 gm. of polishings. It soon become apparent that the fowls were not doing well and the occurrence of polyneuritis ended the experiment. In view of the preceding results it was unnecessary to carry out an experiment with the alkaline filtrate. The inference from these experiments was that sodium hydrate in weak solution destroyed the active substance. The authors conclude that they have failed to isolate the curative substance which occurs in rice polishings. It is apparently decomposed during the fractionation and all trace of it is lost. The existence of "vitamin" in the sense that Funk employed that word is therefore disproved.

Annales de Gynécologie et d'Obstétrique, Paris

August, 1914, to April, 1915, XLI, No. 8, pp. 433-480

41 *Premature Separation of the Placenta, and Eclampsia. E. Zarate (Buenos Aires).

42 War Babies. (L'avortement est-il autorisé dans certaines circonstances en dehors des indications d'ordre médical?) H. Hartmann.

41. **Eclampsia with Premature Separation of the Placenta.**—Zarate gives a colored plate showing the "apoplexy" of the uterus and placenta in one of the two recent cases he reports. The eclampsia was very severe in one case but there were only mild and brief convulsions in the other. Both cases terminated fatally for mother and child. In both there was fulminating hemorrhage, absolutely uncontrollable. An emergency hysterectomy was done in one case but the woman died on the table. In the two cases reported here, the premature separation occurred during or just after one of the convulsions. Essen Möller encountered this association of eclampsia and premature separation of the placenta in two of his twenty-nine cases of eclampsia, and Zarate found records of two in twenty-five cases at the clinic for women at Buenos Aires.

Archives Mens. d'Obstétrique et de Gynécologie, Paris

March, IV, No. 3, pp. 97-144

43 *Undulant (Malta) Fever in Relation to Pregnancy and the Puerperium. A. Laffont.

April, No. 4, pp. 145-176

44 *Spontaneous and Traumatic Ruptures of the Dura Mater During Delivery. (Ruptures de la dure-mère cranienne chez les nouveau-nés.) S. F. M. Moreno.

45 Ovarian Fibromas; Two Cases. Meizger and de Kervily.

43. **Relations Between Malta Fever and Gestation.**—Laffont concludes from his personal experience with two cases and analysis of thirty cases he quotes with much detail from the literature, that the ordinary treatment for Malta or Mediterranean fever should be applied regardless of the pregnancy. The only cases in which the pregnancy was artificially interrupted are not encouraging, and Bossi's theories as to the advantage of emptying the uterus as a routine measure in acute infections do not seem to be confirmed by the facts. His

reason for recommending this is the assumption that recently delivered women are peculiarly resistant to infections in general. Laffont advises against lactation, however, especially when the disease is of recent date. The micrococcus is found frequently and over a long period in the vagina, and pains, inflammation and hemorrhage are not uncommon during the course of the disease. Abortion and premature delivery are frequent; the germ seems to be able to traverse the placenta, and the children born at term are almost always weak and many of them succumb. The disease may develop at any stage of a pregnancy and the stress of childbirth may rouse the hitherto latent disease. In this latter case it is likely to be mistaken for ordinary puerperal fever. The micrococci are apt to swarm in breast milk.

44. **Rupture of the Dura Mater During Delivery.**—Moreno examined postmortem the brain of 40 newly born children at Buenos Aires, and in 10 cases he found that the tentorium had been lacerated, with rupture of the falx in 5. Thus, in fully 25 per cent. of the children dying at or soon after birth, the dura mater had been ruptured. This represents 1 in every 105 deliveries at the maternity. He reproduced the rupture experimentally in other infant cadavers by pressure on the sides of the head and describes the mechanism involved. Pressure on the sides of the head is liable with abnormally small pelves, especially if delivery is protracted. In two cases in which the hemorrhage from the rupture was apparently the sole cause of death, the pelvis diameter was 9 and 9.3 cm. Instrumental delivery is most dangerous with the after-coming head.

Bulletin de l'Académie de Médecine, Paris

April 27, LXXIII, No. 17, pp. 483-525

46 *Advantages of Arresting the Circulation in the Lateral Sinus (instead of ligating the jugular vein) in Operations on the Upper Part of the Neck and Base of the Skull. M. Lannois and M. Patel.
47 Paratyphoid Bacillus Isolated from the Blood Apparently a Transitional Form Between Types A and B. Daumézon.
48 The Electromagnet in Locating and Aiding in Extracting Foreign Bodies in the Tissues. J. Bergonié.
49 *Rice Flour for Bread Making. (Utilisation de la farine de riz dans la fabrication du pain.) Maurel.

46. **Compression of Lateral Sinus.**—Lannois and Patel report five cases which apparently demonstrate that it is possible to arrest the circulation in the lateral sinus without harm, after ligation of the arteries, in operations on the upper part of the neck and base of the skull. The jugular vein flattens out at once. The sinus becomes permanently obliterated by clots if the compression is kept up for several days. The measure thus wards off both primary and secondary hemorrhage after wounds in this region, and permits operations for arteriovenous aneurysms and removal of foreign bodies.

49. Summarized in Paris letter, May 22, p. 1777.

Presse Médicale, Paris

April 29, XXIII, No. 18, pp. 137-144

50 Traumatic Arterial Thrombosis with Gangrene of the Limb. (Ischémie et nécrobiose des membres par thrombose artérielle traumatique.) R. Grégoire.
51 Extraction of Bullets and Scraps of Shells with Aid of Roentgenoscopic Table. (Extraction des projectiles de guerre par la méthode de la table radioscopique.) L. Bérard.
52 Importance of Electric Treatment of Functional Paralysis in the Wounded. (Traitement des impotences fonctionelles consécutives aux blessures de guerre.) E.-J. Hirtz.
53 Psychoneuroses in Soldiers. (Troubles nerveux psychiques de guerre.) G. Roussy.
54 *Subcutaneous Injections of Oxygen; Dosage and Technic. R. Bayeux.

54. **Oxygenation of the Body by the Subcutaneous Route.**—Bayeux extols the advantages of subcutaneous injection of oxygen in treatment of gas gangrene, of chronic suppuration and in infected wounds of the chest and bones, citing various authors who have reported experiences in each of these lines. He has been successful himself in treating hemarthrosis and hydrarthrosis by turning a jet of oxygen into the joint until considerable pressure is exerted within. By this means he has cured in wounded soldiers, in a few days, effusions in the knees that had resisted all other treatment for months. An illustrated description is given of the apparatus he has been using for five years for subcutaneous injections of oxygen, permitting measurement and exact control of the inflow. The thighs and the buttocks are the best points for the injections, and if the inflow is kept below 30 c.c. to the minute the injection is not painful as a rule, although some patients feel discomfort if more than 10 or 20 c.c. per minute is allowed. About 250 c.c. is the average dose, but in acute asphyxia a liter or more might be injected in the emergency. In some cases of asphyxia from a poisonous gas, several liters have been thus injected at once. On the other hand, favorable results have been attained with only 100, 150 or 200 c.c. in persons particularly susceptible to the action of the oxygen. The gas is absorbed most rapidly in asphyxia, and two injections a day might be given. In chronic poisoning, anemia and infections, an interval of two or three days is advisable. In some cases the injections have been kept up for several months, with apparently constant benefit. He punctures the joint and plays the oxygen jet in it until the effusion is eliminated, then injects enough of the oxygen to inflate the synovial membrane. He injects at the rate of 70 c.c. to the minute until the intra-articular pressure reaches 70 cm. (water). He has experimented with intravenous injections of oxygen, but this is still in the tentative stage and he does not advise it.

Berliner klinische Wochenschrift

April 26, LII, No. 17, pp. 425-452

55 Intratracheal Insufflation and Other Means for Artificial Respiration. S. J. Meltzer (New York).
56 The Functions of the Thyroid. (Zur Theorie der Schilddrüsenfunktion und der thyreogenen Erkrankungen.) A. Oswald.
57 Device for Writing with the Teeth after Loss of Arms. (Vorrichtung zum Schreiben mit Hilfe des Gebisses.) J. Grünberg.
58 Nature and Heredity of Venereal Diseases and their Influence on the Course of Wounds. (Wesen und Vererbung gewisser infektiöser Krankheiten und deren Einfluss auf den Wundverlauf.) M. v. Zeissl.

May 3, No. 18, pp. 453-480

59 *Bockhart's Impetigo. (Pyodermie.) P. G. Unna.
60 Erysipelas. P. G. Unna.
61 *Constitutional Purpura or Pseudohemophilia. (Die essentielle Thrombopenie.) E. Frank. Concluded in No. 19.
62 *Improved Technic for Frommer's Test for Acetone. N. O. Engfeldt.
63 Typhoid Abscesses; Seven Cases. M. Willimczik.
64 *Operative Treatment of Grazing Wounds of the Skull. (Welche Erfolge hat die operative Behandlung der Tangentialschüsse des Schädels?) F. Sauer.
65 Radium Treatment of Scars. (Radiumbehandlung von Narben.) Kaminer.
66 *Standards for Estimation of Condition of Nourishment, etc. (281 erwachsene Menschen mit "centralnormalem" Ernährungszustand.) G. Oeder. Commenced in No. 17.

59. **Bockhart's Impetigo.**—Unna refers to Bockhart's experiments in 1887 on his own body in which he proved that the pus cocci were able to induce suppurative pustular lesions on the skin different from furuncles, although they are liable to run into furunculosis, and possibly lead to sepsis. It is very rare under ordinary conditions of hygiene, but is frequently encountered now among the soldiers, and is liable to develop into a chronic course. Prophylaxis is the main thing, he preaches. "No true pus coccus affection of the skin, no isolated furuncle, no felon should be taken lightly. When any of these have lasted any time true pus cocci are already installed in the neighboring, apparently sound hair follicles, ready to start new impetigo or furuncles. They must be walled off from the rest of the skin with a rampart of coccus-destroying substances." For this he uses ichthyol, or ichthyol or mercury-phenol plaster, or a zinc-sulphur-chalk-turpentine paste, something like the formula given in these columns recently, May 1, p. 1533.

Before applying any of the above he dabs lightly with concentrated phenol the suppurating points and the roots of the hairs around this spot. In case of extensive pyodermia all the pustules must be opened and the entire body rubbed long and thoroughly with soap. Any soap will do, especially soft soap, except tar soap, which, he says, breeds folliculitis. In

sharp contrast to eczema, the skin all around the impetigo is sound. All the pustules then, with their environment, are spread with the zinc paste. If an impetigo pustule is deep and tender, it should be treated as described in these columns, April 17, p. 1365, Abstract 47. The parts treated with the paste must be covered with gauze to prevent friction from the clothing, as friction and maceration promote the spread of the impetigo.

61. **Constitutional Purpura.**—Frank remarks that the hereditary character of hemophilia is the main feature which distinguishes it from purpura, as the latter is strictly individual. The symptoms of each are so much alike that purpura might well be called pseudohemophilia, although the petechiae scarcely ever occur to such an extent in true hemophilia, and the joints are spared in purpura. Of the chronic form of purpura, accompanying the individual through life after it is once acquired, Frank cites thirty-four cases from the literature and describes four from his own experience, referring also to a few cases recently published, including Duke's in THE JOURNAL, Oct. 1, 1910, p. 1189. He has never known of complete recovery in any case, and is inclined to believe that in most cases the supposed recovery from an acute attack was merely the subsidence into latency of a chronic purpura which the physician had happened to see during an exacerbation. In the three cases reported in this instalment, the first symptoms developed at the age of 12, and in the first case the hemorrhage proved fatal at the second exacerbation a year later. During the year's interval the child had apparently thrown off the affection. There was almost a total absence of blood platelets—a thrombopeny. In the third case attacks had returned once a year, for six years, lasting for a few weeks each time. In one of these attacks hemorrhages in both eyes compelled enucleation of one and iridectomy in the other eye.

62. **Tests for Acetone.**—Engfeldt modifies Frommer's technic for acetone in the urine by increasing the proportion of alkali. It renders the test so sensitive that it is not adapted for clinical use, as traces of acetone are present in all the body fluids. But for physiologic research the modified test is bound to prove very valuable.

64. **Tangential Wounds of the Skull.**—Sauer declares that if the skull has not been opened by the bullet, it is better to refrain for a time from operating even although the skull has been indented along the course of the bullet. By waiting until the man has reached a hospital where asepsis can be counted on, his chances are much better. The danger from the delay is far less than from the infection which is almost certain when any operation is attempted at the front.

66. **Standards for State of Nourishment.**—Oeder has worked out a formula for the standard weight for men and for women according to the height. Also an index for the condition as regards the nourishment. The latter standard is independent of the height, and both of the age. His previous communication on this *Fettpolsterdickeindex* was summarized in Abstract 120, May 28, 1910, p. 1831. He takes up a fold in the abdominal wall, to the right of the umbilicus, and measures its thickness with calipers. He states here that the normal range is from 2.48 to 2.69 cm., from 1 to 1⅛ inches.

Correspondenz-Blatt für Schweizer Aerzte, Basel

May 1, XLV, No. 18, pp. 545-576

67 *Actinomycotic Suppurative Meningitis; Two Cases. C. Wegelin.
68 *Outcome of Treatment of Lung Diseases in a Swiss Sanatorium. (Dauerresultate des Glarner Sanatoriums für Lungenkranke in Braunwald.) F. Oeri.

67. **Actinomycotic Meningitis.**—The fatal meningitis was traced in one case to a minute latent abscess in the lung, and in the other to a process in the jaw below a carious tooth. The primary lesion may be latent or manifest in such cases, but the meningitis runs an acute course when symptoms develop. The patients were a young man and a woman of 36.

68. **Outcome of Sanatorium Treatment.**—Oeri reviews the present status in 1,365 cases of pulmonary tuberculosis given sanatorium treatment during the fifteen years before 1913. Of the 355 in the first stage, 83.9 per cent. are still living; 54.2 per cent. of the 223 in the second stage and 25 per cent. of the 516 in the third stage. The outcome is not known in 169 cases. Of the first stage survivors, 82.5 per cent. have full earning capacity, as also 80 per cent. of the surviving second stage patients, and 60 per cent. of those in the third stage. He mentions in particular that of the 288 patients who still expectorate, 180 say they use their pocket spit cups regularly and fifty-six use its equivalent. Only twenty-eight have given it up as too much of a bother.

More than 10 per cent. of all the survivors related that they had been handicapped later in their self-support and in their social life by the fact that they had been in a sanatorium. The stigma clings to them, and they complained of the irrational prejudices of their environment. This is particularly to be deplored, as this unreason makes it especially hard for those who are fighting their disease most conscientiously. He thinks physicians have unintentionally bred this tuberculophobia by their efforts to stamp out the disease. It is the task of the profession now to realize, itself, and to teach, that tuberculosis is not one of the diseases which appear in epidemic form, like cholera or typhoid, and which can be avoided by keeping away from them. We must realize that we cannot escape contact with tuberculosis; we encounter it right and left. Instead of thrusting out those afflicted with it, we must train them to help us fight it. This is possible only when physicians combat the fear of bacilli, a fear which we ourselves have planted, and impress on the laity the realization of their natural resisting forces. Not until this is done can we expect that the tuberculous will do their part by applying early for institutional care, and that they will not be deterred by the prejudices of others against the use of prophylactic measures. It is our task to encourage and make it easy for the tuberculous to apply early for instruction and treatment.

Deutsche medizinische Wochenschrift, Berlin

April 15, XLI, No. 16, pp. 457-484

69 *Compression of Femoral Arteries as Test of Functional Capacity of the Heart. (Funktionsprüfung des Herzens nach einer 10 jährigen klinischen Erfahrung.) M. Katzenstein.
70 *Operative Fixation of Sagging Liver. (Verfahren zur Leberbefestigung bei Lebersenkung und eine Bezeichnung für die Grosse einer Magensenkung.) W. Gross.
71 Gunshot Wounds of the Lungs. (Brust-Lungenschüsse und ihre Komplikationen.) E. Schultze.
72 Artificial Legs. (Ueber künstliche Glieder.) H. L. Heusner.
73 Diathermy for the Wounded. G. Bucky.
74 Experiences in a Field Hospital. P. Kayser. Commenced in No. 15.
75 *Treatment of Venereal Diseases During the War. (Behandlung geschlechtskranker Soldaten im Kriege.) C. Stern.
76 Frost-Bite More Liable with Waterproof Foot-Gear. (Wasserdichte Fussbekleidung und Erfrierungen.) H. Glasewald.

April 29, No. 18, pp. 517-541

77 Bread and Its Properties. (Vom Brot und seinen Eigenschaften.) M. Rubner.
78 Importance of Early Operative Treatment of Wounds of Peripheral Nerves in War. R. Casarer.
79 Gins' and Conradi's Methods for Differentiating Diphtheria Bacilli Are Not Reliable. (Zur Diphtheriediagnose.) H. Reiter.
80 *Agglutination After Vaccination Against Typhoid. A. Hirschbruch.
81 Protective Ferments in Serodiagnosis. (Klinische Studien mit Abderhaldens Dialysierverfahren.) H. Steiner. Commenced in No. 17.
82 *Tardy Hemorrhage After Gunshot Wounds. (Spätblutungen nach Schussverletzungen.) C. Longard.
83 Improved Extension Plaster Cast. H. Topfer.
84 *Simple Test for Iodin. J. Schumacher.
85 Means to Reduce Infant Mortality. (Bekämpfung der Säuglingssterblichkeit — eine Frage der Massenbelehrung.) Von Behr Pinnow. Commenced in No. 17.

69. **Test of Functional Capacity of the Heart.**—It is now ten years since Katzenstein called attention to the importance of the findings when compression is applied to the femoral arteries. He presses with the middle finger the artery at Poupart's ligament, through a single covering with no exposure of the patient, compressing thus the artery on both sides. The blood pressure and pulse are recorded before, and again after the pressure has been applied for from two to two and a half minutes. With a sound heart, the blood pressure is found higher afterward, the pulse slower. If the blood pressure and the pulse beat have not

changed, this shows that the heart is not quite normal, but not actually incompetent; when the insufficiency is of a higher grade, the pulse increases. When the blood pressure is found lower and the pulse is accelerated, this warns of severe functional disturbance on the part of the heart. Its severity is proportional to the extent of the drop in the blood pressure and the increase in the pulse beat. He has applied this test or had it applied once or more times nearly every day of the ten years, and this experience has constantly confirmed the accuracy and the convenience of the simple technic.

The findings with this test show how the heart suffers from chloroform; even a sound heart shows signs of injury up to the twelfth or fourteenth day. With an already damaged heart it may be three weeks before the heart returns to its previous condition. He thinks that these findings warn against letting patients get up early after any operation unless the heart is sound and the operation a minor one. With chloroform and an already weakened heart, the danger of thrombosis is materially greater. Katzenstein advises against any operation when this test shows that the heart is in a bad way unless the indications are vital, and then usually only under local anesthesia. The findings with this functional test warn of the cases in which no operation should be attempted, and of those in which local anesthesia will have to be used. He gives the details of three particularly instructive cases, out of 3,000 in which this test has been applied, to illustrate the important information afforded by it when nothing else suggested that the heart muscle was below par. In one case of pyonephrosis this test warned of the danger from general anesthesia; even under local anesthesia there was a severe collapse and the pulse kept for weeks at 115 or 120, until final recovery followed. There is very little doubt that this patient would not have survived under general anesthesia.

70. **Fixation of Sagging Liver.**—Gross has usually found the ligamentum teres of the liver stout and strong. Pulling on it tips up the liver, and when this heavy organ has sagged it can be restored to place by cutting this round ligament near the umbilicus, drawing it up over the ninth rib and suturing the ends of the ligament together again. This pulled the edge of the liver up 10 cm. higher in the one case in which he has applied this method to date. All disturbances ceased at once and the woman has been in good health since. The edge of the liver can be felt two fingerbreadths above the umbilicus. The ligamentum teres he utilizes also in fixation of the sagging stomach, tying off the pylorus with it, and thus raising the stomach when the ptosis is of the third degree. With the first degree of ptosis of the stomach, the antrum of the pylorus reaches just to the umbilicus. With ptosis of the second degree, the umbilicus lies at about the middle of the antrum. The third degree is represented by the antrum entirely below the umbilicus. When the stomach sags to this extent, he declares that no relief can be anticipated except from an operation.

75. **Venereal Disease in the Army.**—Stern is chief of a special hospital at Düsseldorf for soldiers with venereal diseases, and he rejoices over the fact that the younger men form only a small proportion, 25 per cent., of the soldiers with venereal diseases. He regards this as evidence that the "enlightening" of the public in sexual hygiene is beginning to bear fruit. Wolff at Stettin has reported similar experiences; married men form about 30 per cent. of all the cases, and Stern's experience has confirmed this, that the married soldiers expose themselves most readily to chances of infection. Stern has been impressed further with the large number of extragenital cases of syphilis now being encountered. The increase in the numbers of primary sores on the lip he ascribes in part to the overoptimism of both physicians and laity in regard to the permanent efficacy of salvarsan. People are relying on it too much and thus underestimating the dangers of syphilitic infection.

80. **Agglutination Test After Vaccination Against Typhoid.**—Hirschbruch describes a method of graduated estimation of the agglutinins in the serum which gives instructive findings not only after vaccination, but in all cases suspected of typhoid. The ordinary agglutination test is useless in those vaccinated against typhoid, he says.

82. **Tardy Hemorrhage After Gunshot Wounds.**—Longard refers in particular to wounds in which the artery has been grazed by a bullet, and this damaged part of the wall gives way sooner or later. He has had about thirty-two cases in which sudden profuse hemorrhage came on six or eight days after the man had been shot, but was apparently recovering without ill effects. The wounds often had nearly or quite healed by this time. The artery has to be completely exposed in order to find and ligate the bleeding vessel. There is no chance of a large artery's healing spontaneously after such an injury.

84. **Test for Iodin.**—Schumacher calls attention to a test based on the facts that hydrogen dioxid is able to liberate iodin from its salts and also to oxidate it. Then by adding some substance, such as a 1 per cent. alcoholic solution of benzidin, which changes its tint with oxidation, we can determine the presence of iodin and gauge its amount. The hydrogen dioxid is mixed with an equal amount of the urine to be tested and with one-fifth the amount of the benzidin solution. On heating the upper part of the fluid just to boiling, it turns brown or black if there is iodin present, and a precipitate of the same color is thrown down. Cooling a little and adding chloroform, the latter turns brown or black. Normal urine keeps its tint unmodified or becomes a dark straw yellow. The color change is much more decided with this test than with the nitric-acid technic.

Jahrbuch für Kinderheilkunde, Berlin

May, LXXXI, No. 5, pp. 371-464

86 Specific Susceptibility to Tuberculin and Its Annulling by Administration of Tuberculin. (Die Tuberkulinüberempfindlichkeit und die durch Tuberkulindarreichung zu erzielende Tuberkulinunempfindlichkeit.) G. Bessau. Concluded in No. 6.

87 Pseudomeningitis in Tuberculous Children; Two Cases. H. Brockmann.

88 Mineral Metabolism in Infants on Breast Milk and Albumin Milk. (Vergleichende Untersuchungen über den Stoffumsatz bei Ammenmilch und Eiweissmilch mit bes. Berücksichtigung des Schwefelhaushaltes.) A. Peiser.

Medizinische Klinik, Berlin

May 2, XI, No. 18, pp. 501-526

89 Wounds of Peripheral Nerves in War M. Nonne. Concluded in No. 19.

90 Hygiene at the Front. (Hygienische Erfahrungen im Felde.) P. Kuhn and B. Möllers. Commenced in No. 15.

91 Work in the Field Hospital. (Aerztliche Tatigkeit und Erfahrungen beim Feldlazarett.) E. Liebert.

92 *Etiology of Disease of Ovaries and Tubes. (Adnexerkrankungen.) A. Neisser.

93 Trauma and Chronic Infectious Diseases. E. Schepelmann.

92. **Nongonorrheal Pelvic Disease.**—Neisser protests most emphatically against the assumption that inflammatory processes in ovaries or tubes in young women soon after marriage are always of gonorrheal origin. The gynecologists almost invariably affirm this, and when no gonococci can be discovered in either the husband or the wife, they assume merely that the bacteriologic technic was defective. Some of the various germs which are liable to swarm in the urethra that has once been the site of gonorrhea may acquire pathogenic properties enough to set up inflammation in the ovaries or tubes—Neisser thinks there is much to sustain the possibility of this, although it has not been demonstrated to date. This will require the cooperation of both urologists and gynecologists in zealous bacteriologic research, but if it can be proved much harm can be obviated. As things are now, these ovarian and tubal processes in young wives are liable to be given erroneous treatment with antigonococcus vaccines, etc. Besides this, the confident assertion of the gynecologist that gonococci must be responsible for the pelvic mischief, has broken up the happiness of many a young couple and led to divorce proceedings, when in reality no basis for the assertion could be produced.

Progress cannot be made here without the help of the gynecologists; they should examine as extensively as possible the secretions from the uterus and cervix, both with the micro-

scope and with culture mediums, excluding absolutely all admixture of vaginal secretions. The mucus should be taken from the cervix twenty-four or forty-eight hours after careful disinfection of the canal of the cervix.

Monatsschrift für Geburtshülfe und Gynäkologie, Berlin

May, XLI, No. 5, pp. 371-456

94 *Eclampsia at Fourth Month of Pregnancy. O. Eisenreich and A. Schmincke.
95 Localization of Influenza Bacilli in Genital Organs at Term as Cause of Puerperal Fever; Recovery. H. Thaler and H. Zuckermann.
96 *The Protective Ferments in Relation to Obstetrics and Gynecology. (Neue Probleme des parenteralen Eiweissabbaues in ihrer Beziehung zur Geburtshülfe und Gynäkologie.) T. Petri. Commenced in No. 4.
97 Combination Actinotherapy for Uterine and Mammary Cancer. (Mehrjährige Erfolge der kombinierten Aktino-Therapie bei Karzinom des Uterus und der Mamma.) G. Klein.

94. **Eclampsia at Fourth Month of Pregnancy.**—The necropsy findings in the case reported explained the sudden death of the woman of 27 as the result of rupture of a sclerotic cerebral artery in consequence of the sudden rise in blood pressure during an eclamptic convulsion. The woman had a chronic kidney affection and was in the fourth month of pregnancy. There had been no convulsions before this severe one which proved fatal, but the liver showed the changes characteristic of eclampsia.

96. **Serodiagnosis of Pregnancy.**—Petri's extensive clinical and experimental research has elicited a number of new facts, he says, which have an important bearing on the parenteral digestion of albumin, especially from the obstetric and gynecologic standpoints. The tables and the details of the experiments show the wide scope of the work undertaken. Among the new facts thus learned are that the same conditions as follow parenteral incorporation of the individual's own serum can be artificially induced in animals by causing the production of a hematoma. Ferments are formed after absorption of the serum albumin in the blood effusion, and these ferments are able to digest various organ tissues, including placenta tissue. For this and other reasons cited, he says that the Abderhalden reaction will always be positive in pregnant women, but it will also be positive in the nonpregnant whenever conditions are present, such as pathologic or mechanical processes causing extravasation of blood, which permit the absorption of the individual's own albumin. The albumin-splitting ferments are probably mobilized at once after intravenous introduction of unputrefied albumin from the individual or from another individual of the same species, man or animal. The duration of the action of the ferments is probably limited to a certain period of time.

Münchener medizinische Wochenschrift, Munich

April 13, LXII, No. 15, pp. 497-536

98 *Action of Hydrogen Dioxid and Sugar on Anaerobes. (Wirkung von Wasserstoffsuperoxyd und von Zucker auf die Anaerobier.) K. Spiro.
99 Combined Radiotherapy and Intravenous Chemotherapy in Treatment of Uterine and Mammary Cancer. G. Klein.
100 *Typhoid Spondylitis. G. Galli.
101 Apparatus for Inducing Pneumothorax. (Neuer, transportabler Pneumothoraxapparat mit Benutzung von Sauerstoff und Stickstoff in statu nascendi.) F. Kornmann.
102 *Rapid Restoration of Functions of Resected and Sutured Sciatic Nerve. H. Thiemann.
103 *Gunshot Wounds of Peripheral Nerves. L. Huismans, K. Steinthal, K. Döpfner and R. Sauter.
104 Localization of Foreign Bodies. (Neues Lokalisationverfahren mittels metallischer Koordinatensysteme.) P. Meisel.
105 Bacteriologic Work at the Front. J. Basten.
106 Importance of Supplying Salt When the Febrile Are Kept Long on Milk. (Kochsalz bei langer dauernden Fieberzustanden.) J. Schütz.
107 Appendicitis as Seen in Field Hospitals. (Blinddarmentzündung im Felde.) E. Pflaumer.

April 27, No. 17, pp. 573-608

108 Mode of Action of Common Disinfectants. (Prinzipien in der Bekämpfung einzelner lokaler Wundentzündungen.) O. v. Herff.
109 Selection of Disinfectants for Special Microbes. O. v. Herff. (Zur Behandlung der septischen Allgemeininfektion.) P. Hussy.
110 *Complement Fixation as Test for Typhoid. (Die Komplementablenkung als Reaktion zur Unterscheidung zwischen den Seren Typhuserkrankter und gegen Typhus Geimpfter.) Felke.
111 *The Opium-Bromid Treatment of Epilepsy According to Flechsig. H. G. W. Kellner.
112 The Protective Ferments in Psychiatry. (Zur Abderhaldenschen Reaktion in der Psychiatrie.) W. Mayer.
113 *Wounds of the Skull. (Schadelschussverletzungen im Feldlazarett.) A. Lawen and Syring.
114 Meningitis from Extension to the Ventricles of Suppuration Following Gunshot Wounds of the Brain. H. Chiari.
115 Intracranial Pneumatocele Following Gunshot Wound; Two Cases. J. Duken.
116 Flap-Door Incision and Draining to Prevent Prolapse of Brain Substance. (Zur Verhutung des Hirnprolaps nach Schädelschussen.) Boerner.
117 Homolateral Hemiplegia After Injury of the Head. L. Roemheld.

98. **Action of Peroxids and Sugar on Anaerobes.**—Spiro writes from the Institute for Physiologic Chemistry at Strassburg to offer an explanation for the undoubted benefit realized in treatment of the wounded by hydrogen dioxid and sugar. The sugar modifies the medium and this in turn acts on the germs in the medium. Those that have been having the upper hand are crowded out, and harmless ones gain the supremacy. The bacterial growth is different when there is sugar present, and the products of the bacterial growth are different. For example, a putrefying solution of yeast smells of indol; if sugar is added, there is no trace of indol to be detected with any tests. Modifying the medium modifies the bacterial growth, and this may mean everything in case of a wound, as wounds swarm with all kinds of bacteria. He ascribes the favorable action of hydrogen dioxid to its physical properties; it cleans out the wound, floats out on its foam debris and bacteria from the depths and crevices, bringing them to the surface where the light and air or local measures can destroy them more easily.

100. **Typhoid Spondylitis.**—A man of 59, toward the close of an ordinary attack of typhoid, suddenly developed attacks of chills and high fever suggesting pyemia. This was finally explained, after a month, by pains in the lumbar region from a typical typhoid spondylitis. The pains were relieved by a plaster corset, but he was never entirely free from pain for eight months and the fever kept up for the same length of time. Recovery followed at last, apparently complete. Agglutination was pronounced at 1:200 even after eight months. The pain with typhoid spondylitis is more intense than with tuberculosis of the spine, and is aggravated by the slightest movement or lightest touch, and is not relieved by drugs, not even morphin in the usual dosage. The tenderness is localized in the apophysis of one or two vertebrae. In 80 per cent. of the cases on record, about 100, the lumbar region was the seat of the trouble. The affection may linger for two years or more.

102. **Rapid Restoration of Function after Suture of Nerve.**—Thiemann reports a case which he thinks is a record breaker in that complete paralysis of the foot and the most intense and continuous pains, which had followed a gunshot wound of the knee, were cured by resection of 3 cm. of the cicatrized nerve and suture of the stumps. The pain was arrested at once, and the man was able to move his toes by the end of the second week and the whole foot when the cast was taken off in the third week. Both the wound and the operation healed by primary intention.

103. **Suture of Peripheral Nerves.**—The technic for separating a nerve embedded in cicatricial tissues and also for partial or complete suture are described, with one illustration. If there is suppuration no attempt should be made until the inflammation has subsided. Fistulas in the vicinity and sequesters are also contraindications. The sound nerve should be touched with instruments as little as possible. The plaster splint should be applied for two weeks with the nerve two-thirds relaxed, then relaxed still more for a week, and then gradually stretched.

Steinthal presents data from times of peace which show that even when all conditions are favorable the outcome of suture of a nerve is not so favorable as generally assumed. In the war wounds the nerve is damaged much more than is the case usually in the injuries outside of war. He has sutured the nerve in twenty-three cases and released it from pressure of scar tissue in thirteen others. He recalls that operation must be delayed until all inflammation is past, and

warns that too great hopes must not be placed on it. The wounded must be informed that the operation is unconditionally necessary but that a complete success cannot be guaranteed.

110. **Complement Fixation as Test for Typhoid.**—Felke states that in 39 persons vaccinated against typhoid, the agglutination test gave nearly constant positive findings while the complement-fixation test was constantly negative. In 9 typhoid cases, agglutination was positive and also the complement-fixation test, as also in a few convalescing from typhoid. He thinks that the complement-fixation test may thus prove of assistance in diagnosing or excluding typhoid in persons who have been vaccinated.

111. **Opium-Bromid Treatment of Epilepsy.**—Kellner has followed Flechsig's technic in treatment of 250 epileptics since 1906 and has never witnessed any harm from it. His impression on the whole is favorable and he asks those who denounce this method whether they can show any better results than his own average of 25 per cent. essentially improved and all more or less modified for the better. The opium is given three times daily for fifty days, beginning with 0.05 gm. of the extract of opium at a dose, increasing to a maximum of 0.29 gm. This is the highest dosage, calculated for an otherwise healthy adult. The fifty-first day the opium is stopped and bromids given, in the Erlenmeyer mixture, three times a day. The dosage here must be cautiously individualized and supervised, watching for signs of intolerance or bromism and slowly reducing the dose if such appear. Sudden suspension of the bromids almost inevitably brings back the seizures. His usual dose of the bromid mixture for a strong adult is 5 gm. a day: 1 gm. in the morning and 2 at noon and again at evening. This is increased to 6 gm. in a week and to 7 gm. after another week. He never goes above this latter dose, but thinks the bromids will have to be taken all the rest of the life if the epilepsy has been cured by this course of treatment and prolonged observation has shown that a certain dose can be kept up indefinitely without harm.

He relates a few typical instances of the benefit from this method of treatment. One patient was a young man who had had for years several seizures a week, rebellious to all the measures applied by various physicians. He was the only child of wealthy parents and was intelligent and well brought up. During the last two years he had had periods of wandering, losing his identity. He took the opium-bromid course in 1910 and had his seizures as usual during the fifty opium days. They stopped when the bromid was begun and he has never had any seizures since. As an extra precaution he returns once a year and takes the whole course over again, and keeps up the bromids all the time, taking constantly his 5 gm. a day. He feels and lives like a perfectly healthy man. Some other cases are reported to show the seizure-provoking influence of alcohol; even half a glass of light wine may bring on an attack after months of freedom.

113. **Importance of Plaster Casts in Treatment of Wounds in War.**—Läwen expatiates on the great value of fenestrated plaster casts in treatment of nearly all kinds of wounds. He is referring here in particular to wounds of the skull, and gives several illustrations of the casts he uses for wounds of the front or side of the skull. The cast leaves the wounded part exposed but otherwise embraces the head and thorax. It materially facilitates changing the dressings, as the wound can be dressed without moving the head. The immobilization relieves the pain and quiets the patient while the brain benefits by the absolute repose thus enforced. If the patient has to be taken elsewhere the cast protects him against injury.

Wiener klinische Wochenschrift, Vienna

April 27, XXVIII, No. 17, pp. 435-462

118 War Aneurysms. (Weitere Erfahrungen über Kriegsaneurysmen, mit bes. Berücksichtigung der Gefässnaht.) H. v. Haberer. Concluded in No. 18.

119 Protect Against Droplet Infection of Typhus as Well as Against Vermin. (Persönliche Prophylaxe gegen den Flecktyphus.) R. Kraus.

120 Complement Fixation in Smallpox. A. v. Kouschegg.

121 Abdominal Wounds. (2 Falle von Kotphlegmone und Kotabszess nach Schussverletzung des Bauches durch Schrapnellfüllkugeln.) V K. Irk.

122 Stretcher on Which the Wounded Can be Carried from the Battle Field to His Home, Wounds Dressed and be Operated on Without Change. (Wie bleibt der Verwundete trotz Operation und Verbandwechsels auf derselben Trage von Gefechtsfeld bis ins Hinterland?) F. Tintner.

123 Wounds of the Spinal Cord in War. (Zur Kasuistik der Rückenmarkschädigungen durch Wirbelschuss.) E. Gamper. Commenced in No. 16.

Zeitschrift für klinische Medizin, Berlin

LXXXI, Nos. 3-4, pp. 199-354. Last indexed February 27, p. 782

124 The Hamburg Diphtheria Epidemic, 1909-1914. F. Reiche.

125 Determination of the Reaction of the Urine. (Reaktionsbestimmungen des Harns.) H. F. Höst.

126 Hexamethylenamin as Disinfectant for the Urinary Passages. (Urotropin als Desinfiziens der Harnwege.) H. F. Höst.

127 Experimental Research on the Biologic Action of Thorium X, Especially on the Blood. A. da S. Mello.

Zentralblatt für Chirurgie, Leipzig

April 17, XLII, No. 16, pp. 257-280

128 *Celluloid Plate for Closing Gap in Skull Not Durable. (Zur Frage der Deckung von grossen Schädeldefekten mittels Zelluloidplatten.) Funke.

April 24, No. 17, pp. 281-296

129 Plastic Operations in War Aneurysms in the Groin. (Zur Behandlung der Schussaneurysmen durch künstliche Wandverstärkung bei Aneurysmen besonderen Sitzes.) H. F. O. Haberland.

May 1, No. 18, pp. 297-320

130 *Technic for Amputations. (Wie soll man amputieren?) Chlumsky.

131 Pedunculated Skin Flaps to Cover Stump End. (Hautplastik statt Nachamputation.) A. Schanz.

128. **Celluloid Not Durable to Close Gap in Skull.**—Funke demonstrated in 1908 a boy who had worn a large celluloid plate for five years as a covering over an extensive defect in the skull. The perforated plate measured 7 by 12 cm. and healed in place without reaction. The sixth year two fistulas developed in the scalp, and he exposed the plate to investigate. He found it broken at several points, the celluloid crumbling, having lost its elasticity and firm structure. A gold plate was introduced in its place and the soft parts healed over it without reaction.

130. **Technic for Amputations.**—Chlumsky insists that the more of the limb that is saved, the better the functioning later. Also that it is wiser to use some kind of prosthesis from the earliest possible moment as the stump heals and behaves differently when it is being actively used. Much is lost that can never be regained if the limb is not used until after retraction, etc., are complete. Some simple artificial limb should be applied as early as possible, changing later to the final prosthesis to be worn.

Zentralblatt für Gynäkologie, Leipzig

April 17, XXXIX, No. 16, pp. 257-272

132 Conservative and Operative Treatment of Chronic Disease of Ovaries and Tubes. (Chronische Adnexerkrankungen.) H. L. Coopman.

April 24, No. 17, pp. 273-296

133 *Treatment of Pregnancy Kidney and Eclampsia. (Zur Behandlung der Schwangerschaftsniere und Eklampsie.) W. Stoeckel.

May 1, No. 18, pp. 297-312

134 *Conservative Surgery of the Ovaries. (Zur Kasuistik der erweiterten Ovarienresektion nach Menge.) E. Löhnberg.

133. **Pregnancy Kidney and Eclampsia.**—Stoeckel's communication is a reply to Gessner's article with this title which was summarized in these columns March 6, 1915, p. 865. Stoeckel denounces his premises as mistaken and his advice as fraught with danger.

134. **Conservative Surgery of the Ovaries.**—Löhnberg reports two cases in which there did not seem to be a trace of normal ovarian tissue as both ovaries were changed into cystomas. Yet some of the cystoma tissue was left on both sides at the operation in the hope that menstruation might continue. This hope was realized, and the young woman not only menstruated regularly thereafter, but conception occurred. In the other case there had been amenorrhea for

three months at the time of the ovariectomy. Seven months later there was an apparently normal menses, but it did not return afterward and the state of the internal genitals thereafter corresponded to that of the menopause.

Gazzetta degli Ospedali e delle Cliniche, Milan

April 25, XXXVI, No. 33, pp. 513-528

135 *The Hemorrhoid Syndrome. (Neuro-artritismo e sindrome emorroidaria.) C. Pascale.

April 29, No. 34, pp. 529-544

136 *Possibility of Recuperation of Intestine in Strangulated Hernia. C. Scandola.

May 2, No. 35, pp. 545-560

137 Strangulation in Hernia of Appendices Epiploicae; Alleged Twelfth Case on Record. R. Mosti.

135. **The Hemorrhoid Syndrome.**—Pascale reports the case of a man of 60 with hemorrhoids for ten or twelve years and a general tendency to sluggish metabolism. A recent accident to one eye was followed by glycosuria, and then came pains suggesting gallstone trouble, and signs of cystitis. The syndrome thus included glycosuria, cholelithiasis and bladder trouble, but Pascale's analysis and the results of treatment demonstrate that the whole syndrome was merely the manifestation of the condition typified by the tendency to hemorrhoids. Measures to correct this tendency and restore the circulation to normal were followed by the subsidence of the other trains of symptoms, as he relates in detail.

136. **Recuperation of Strangulated Intestine.**—Scandola gives an illustrated description of the findings in two series of experiments on dogs. In the first he shut off a loop 30 cm. long from the rest of the circulation by ligating the artery and vein at each end of the loop. The loop was then resected after six, twelve, eighteen or twenty-four hours and examined under the microscope. In the second series the same ligation was done but the ligatures were removed six, twelve or eighteen hours later and the surviving dogs were killed after an interval of three weeks. Eight dogs were used in all and the results were concordant in that the loop of intestine was able to recuperate whenever the injury from the temporary strangulation was restricted to the mucosa, or the other coats of the intestine were but slightly affected. Even quite serious changes in the mucosa retrogressed, but pronounced changes in the outer layers proved inevitably fatal. Nothing was found to differentiate the strangulated portion in the six-hour animal.

Policlinico, Rome

May 2, XXII, No. 18, pp. 589-620

138 Agglutination in Undulant or Malta Fever. F. Virgillo.

Riforma Medica, Naples

May 1, XXXI, No. 18, pp. 477-504

139 *'Weiss' Potassium Permanganate Reaction in the Urine. (Sul valore clinico della reazione di Weisz.) A. Ferrannini.

140 Case of Syphilitic Meningomyelitis. U. Scinicariello. Commenced in No. 17.

139. **Test for Chromogen in the Urine.**—Ferrannini discusses the experiences that have been published by others, the technic, the chemistry involved, the reaction in the healthy and in acute and chronic nontuberculous affections, and in various forms of tuberculosis. He also compares the findings with this test with those of the diazo and the tuberculin skin test. The chromogen reaction is not specific for any disease, but in an acute disease, other than typhoid, a positive and pronounced reaction obtainable for several days in succession, strongly suggests tuberculosis. In chronic disease, severe and of long standing, an intense and constant reaction testifies also to the tuberculous nature of the disease, and a negative reaction excludes this unless the disease is in its terminal phase. In tuberculosis, if the reaction is intense and constant, the outlook is unfavorable even although the clinical course seems promising. On the other hand, a faint and inconstant reaction offers a favorable prognosis almost regardless of the clinical course at the time. The long bibliography appended is nearly all Italian. About a dozen French articles are listed but no British or American articles.

Tumori, Rome

March-April, IV, No. 5, pp. 509-632

141 *Primary Cancer of Aberrant Mammary Gland Tissue. (Carcinoma primitivo di un lobo aberrante presternale della mammella.) L. Stropeni.

142 *Primary Tumors of the Pericardium. G. Forni.

143 *Chorioepitheliomatous Tumors in Testicles and Ovaries. (Contributo allo studio dello spermioblastoma a tessitura corioepiteliale.) D. B. Roncali.

144 Gastric Leiomyomas. (Contributo alla conoscenza dei tumori a fibre muscolari liscie dello stomaco.) F. Nassetti. To be continued.

141. **Cancer in Aberrant Mammary Gland Tissue.**—Stropeni's patient was a woman of 57 with an adenocarcinoma in front of the sternum. It was removed three months after the first symptoms had been noted. The microscope revealed the structure to be that of an aberrant lobe of the mammary gland, without any connection with the latter. There has been no tendency to recurrence during the year since although the tumor had been of an unusually rapid and malignant growth.

142. **Primary Tumors of the Pericardium.**—Forni has compiled from the literature fifteen cases and reports another from his own experience. The ages of the patients ranged from 15 to 73, and all were malignant growths but two, but nearly all were necropsy surprises. Even when the malignant disease was known, its exact localization was impossible during life as a rule, or else it was impossible to differentiate the nature of the heart trouble known to exist.

143. **Cancer of the Testicle.**—Roncali refers in particular to tumors of chorioepitheliomatous structure. He regards them as essentially analogous to physiologic embryos; they are pathologic embryos. Chorioepitheliomas of the testicle were long supposed to be sarcomas, but improved technic proved this a mistake. Roncali has encountered two cases, as he describes in detail. The first patient was a young man of 18 who had first noticed signs of a tumor in the scrotum two months before its operative removal. The growth involved both the testicle and the epididymis. A large metastatic tumor developed later in the kidney region, and proved fatal eight months after the first operation. The second patient was also a young man; he was extremely debilitated when first seen and symptoms in the lungs led to the diagnosis of fulminating tuberculosis. He died a few days later and nodules of a neoplastic nature were found in the lungs, suggesting the structure of a chorioepithelioma. The testicles were examined when the above was determined, and the right testicle was found to be the seat of a typical chorioepithelioma, the structure the same as in the nodules found in the lungs, liver, kidneys and spleen.

Semana Medica, Buenos Aires

April 1, XXII, No. 13, pp. 409-440

145 Cystitis with Calcareous Deposits; Two Cases. (Cistitis incrustante.) E. Pozzi.

146 Gangrenous Appendicitis During Pregnancy; Two Cases. (Peritonitis generalizada por apendicitis perforada durante el embarazo.) R. F. Coulin.

147 Relations Between Nose Breathing and Pulmonary Tuberculosis. A. Philibert.

Nederlandsch Tijdschrift voor Geneeskunde, Amsterdam

April 24, I, No. 17, pp. 1415-1502

148 The Wounds from Modern Projectiles. (Wonden door hedendaagsche vuurwapenen.) P. H. Van Rooyen.

149 *Localization of the Pain with Chronic Disease of the Pancreas. C. G. Vervloet.

150 Trigeminal Disturbances from Tumor in the Brain as Aid in Localization. C. T. Van Valkenburg.

149. **The Pain in Differential Diagnosis of Chronic Disease of the Pancreas.**—Vervloet gives the details of six cases to show that pain is not so rare with chronic pancreatitis as some assert, and that its location is characteristic, as also its persistency, long duration, and sometimes its severity. Even when there is no spontaneous pain it may be elicited by pressure. The pain in the lumbar region is most characteristic, but there may be pain in the stomach region and along the median line and in both flanks; in the left hypochon-

drium; the lumbar vertebrae; the upper third of the sacrum; a region a few centimeters wide along and to the left of the lumbar vertebrae; the left arm and hand; the left thigh to the knee; the left scapula and shoulder, the left side of the neck and the ear. One case of old duodenal ulcer presented nearly the entire array of the above localizations of the pain. In one case an operation was done for supposed gallbladder trouble, but no stones were found, merely torpid chronic pancreatitis, and it was learned then, too late, that the man had had pain in both scapulas. A few weeks after the operation, pressure on the lumbar vertebrae induced pain. The lumbar pain is more instructive than pain in the stomach region, as the latter may occur with various affections. In the sixth case reported the pain was more on the right side; the first and second lumbar vertebrae were tender, and a very painful point on pressure was found under the twelfth rib close to the spine. Necropsy revealed a cancer in the head of the pancreas.

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151 *Direct Transfusion of Blood. R. Ingebrigtsen.
152 *Operative Removal of Emboli in the Arm. J. Nicolaysen.
153 *Disease of the Ductless Glands. (Bidrag til de endokrine organers klinik.) L. Dedichen.
154 *Syphilis and Tuberculosis. H. Sundt.

151. **Direct Transfusion of Blood.**—Ingebrigtsen tabulates fifty cases with all the data, as compiled from the literature, in order to acquaint the profession in Norway with the advantages and the technic of Crile's method of direct transfusion of blood. His list includes articles on the subject in The Journal. He classifies the cases according as the transfusion was done for a constitutional hemorrhagic tendency, hemorrhage from the digestive tract, postoperative and septic anemia or puerperal or other uterine hemorrhage or pernicious anemia. In the six cases in this latter group the results were not especially encouraging. The transfusion in thirteen cases rescued the patients from imminent death. He also gives the minute details of a case in his own experience in which a girl of 8 had lost so much blood from uncontrollable epistaxis that the heart was scarcely able to keep beating. During the transfusion the pulse dropped from 120 to 86 and the child promptly recuperated. The only pathologic finding in the blood is the scarcity of blood platelets; the symptoms observed at the time and during the months that followed suggest a tendency to chronic purpura and the prognosis is reserved although the transfusion can be repeated at need in case there is further trouble from the hemorrhagic diathesis. During the year since she has had one attack of slight hematuria and her lips have bled a little at times.

152. **Operative Removal of Embolus in Both Arteries in the Arm.**—In Nicolaysen's case the heart seemed to be sound but pains in the fingers of the right hand, preceded for a few months by occasional numbness, indicated obstruction of the circulation. The pain grew more serious and the second week the diagnosis of embolism was beyond question. The embolus was supposed to be at its usual site, the bifurcation of the brachial artery. It was exposed under local anesthesia but no traces of an embolus could be found here nor in the upper half of the radial or ulnar arteries. If the diagnosis of embolism was correct, there must be two emboli, one in the radial and one in the ulnar artery, and when the fingers began to show signs of gangrene, three days after the other operation, the lower half of the ulnar artery was exposed and was seen to be bulging over a 2 cm. stretch; pulsation was evident above but none below this bulging portion. An incision 1.5 cm. long was made and the embolus protruded at once and was readily extracted whole. The interior of the vessel seemed normal, and pulsation became manifest below at once after the embolus had been extracted. A week later the radial artery was exposed and the embolus was removed in the same way only that it was twice as long as the first and broke while it was being taken out, and the lower part had to be scooped out.

The circulation returned at once in the hand; there was no further pain and the radial pulse was good when last inspected, two months later. It is often a difficult matter to locate the embolus exactly, and the artery often has had to be exposed at several points before the right place was found. According to the experiences on record, it seems as if thirteen hours' obstruction of the circulation is the limit for possible recuperation after complete obstruction. But in Nicolaysen's case the vessel walls did not seem to have been damaged by the distention from the emboli although nineteen days had elapsed after the first symptoms before they were both extracted. The emboli were also found quite loose, not adherent at any point to the vessel wall. His patient was a man of 52, previously healthy. Angiosclerosis is accepted as the fundamental cause for the embolism; the heart is apparently normal.

153. **Disease of the Ductless Glands.**—This address describes the leading affections for which one or more of the ductless glands are now regarded as responsible, citing typical instances of each, with eighteen illustrations.

154. **Syphilis and Tuberculosis.**—Sundt quotes Calot to the effect that it would be better if physicians in charge of lung sanatoriums would think oftener of syphilis, and if syphilologists thought oftener of tuberculosis. Sundt is chief of the seashore antituberculosis sanatorium at Fredriksvern, and he says that in a comparatively large number of cases the patients sent to the hospital are not infected with tuberculosis or, if infected, the symptoms which led to their hospitalization were not any for which the tuberculosis was responsible. In 40 cases of hip-joint disease during the last three years, 27.5 per cent. proved to be nontuberculous as also 20.7 per cent. of 29 cases of knee diseases. In nearly all of the nontuberculous hip-joint cases, the trouble proved to be Perthes' juvenile deforming osteochrondritis, but the knee affections were nearly all of syphilitic origin, namely, in 4 out of 6. The Wassermann reaction was positive in these and also in a surprisingly large number of the patients with other affections, even in many with unmistakable tuberculous lesions. The patients were mostly children, and latent syphilis masqueraded as tuberculosis or "scrofula" in a surprisingly large number or accompanied unmistakable tuberculosis. He gives an illustrated description of several cases; in one both knees were affected after a trauma and had long been treated as for tuberculosis while destructive lesions in the palate had been treated for lupus. The tuberculin reaction was positive as also the Wassermann, and treatment on this latter clue soon restored the child to clinical health. He adds that a similar sequence was encountered soon after in another case: trauma; bilateral knee trouble, followed by a destructive affection of the nasopharynx. Other cases are cited to show that syphilis alone is able to induce the classical picture of "scrofula" in its most typical form. All these patients in this group presented merely the late manifestations of inherited syphilis; in none of them had it been recognized, but tedious treatment had been long enforced for tuberculosis or lupus. There are no absolutely reliable differentiating clinical signs; a primary localization of tuberculosis in the nasopharynx is of very rare occurrence. Tuberculous lesions generally spread superficially, the syphilitic burrow deep. The tuberculin test is most instructive when it induces a focal reaction, but this is rather an exception than the rule. When the findings are dubious, a course of treatment as for syphilis may decide the question; we know that the Wassermann may be dubious even with known syphilis. He reiterates that we must remember that not everything that subsides under potassium iodid is syphilis, and that not all that is syphilis subsides under it. Sixteen cases are reported and discussed showing the many problems presented by the coincidence or mistaken diagnoses of syphilis and tuberculosis. Since the beginning of 1915, 5 of the 22 new admissions to the sanatorium responded positively to the Wassermann test. They had been sent in with the diagnosis of tuberculous disease of the hip joint, foot, knee or face and larynx.